

Section 7: Field Test Procedures



WARNING - ELECTRIC SHOCK AND BURN HAZARD: Disconnect all utilities to washer before servicing. Do not service the washer unless all utilities have been properly locked out. Always follow OSHA Lockout-Tagout and electrical safety-related work practice standards. (See 29 CFR 1910.147 and .331 through .335.)



WARNING! PERSONAL INJURY AND/OR EQUIPMENT DAMAGE HAZARD: Only fully qualified service personnel should assemble and/or make adjustments to this equipment. Maintenance done by inexperienced, unqualified personnel or installation of unauthorized parts could cause personal injury, invalidate the warranty, or result in costly damage. Contact your STERIS sales or service representative regarding service options.

7.1 GENERAL

Each unit must be tested and inspected according to this procedure whenever a part is adjusted, repaired, or replaced. Items which do not comply to test procedures must be corrected and retested.

Keep records of all readings, measurements, discrepancies, corrections, tests and re-inspections. Each test must meet the standards of material and performance set forth in this procedure. Refer to Component Repair and Replacement, Section 8, if mechanical problems arise or adjustment is required.

Read and complete test procedure carefully to know steps to be accomplished and the test equipment required, before starting.

7.2 TEST INSTRUMENTATION REQUIRED

- Stopwatch — to verify cycle phase timing and injection times.
- Calibrated pressure gauge 1/4" NPT 0-160 psi (0-1100 kPa).
- Calibrated pressure gauge 1/4" NPT 0-20 psi (0-138 kPa).
- Digital potentiometer with 2 thermocouple extensions.
- Multimeter (voltage, amps, ohms).

- Place 0-160 psi pressure gauge on pressure piping above pressure transmitter (see Figure 9-17). Place 0-20 psi pressure gauge on suction piping upstream from the self cleaning screen (see Figure 9-18). Place one thermocouple on a load in the middle of the wash chamber and the other one at the inlet of the exhaust duct inside wash chamber (if drying system option is present).

7.3 PRELIMINARY CHECKS

1. Verify proper hookup of electric, steam, hot water and cold water (if cooldown tank or cold water injection system option is present).
2. Inspect all piping clamps and tighten if necessary.
3. Verify that all pneumatic valves and cylinder are connected.
4. Verify that all electrical devices (valves, sensors, light, switches, control) are connected.
5. Clean sump screen inside wash chamber and self-cleaning screen on service side.

7.4 OPERATIONAL & SAFETY TESTS

Open all utilities (air, hot water, cold water, steam), put electrical disconnect switch to ON position and toggle printer POWER-OFF/STANDBY switch to POWER.

7.4.1 Emergency Stop Guard Rails Test

1. Control should now be in Automatic Mode and display the Main Cycle Menu.
2. Press DOOR OPEN to open doors (if not already open).
3. Press left Emergency Stop Guard Rail. Control and all outputs should be de-energized.
4. Raise left Emergency Stop Guard Rail. Control should be re-energized and the display should show the Main Cycle Menu.
5. Repeat preceding steps to test right Emergency Stop Guard Rail.

7.4.2 EMERGENCY STOP Push Button Test

1. Press DOOR CLOSE (on both sides if double door unit) to close doors.
2. Select any cycle and press CYCLE START.
3. Press Emergency Stop Button on load side once

the PRE-WASH phase has started. Control and all outputs should be de-energized.

4. Pull out EMERGENCY STOP Button on load side, control should be re-energized and the display should show the Main Cycle Menu.
5. Repeat preceding steps to test EMERGENCY STOP Button on unload side if double doors unit.

7.4.3 Inputs/Outputs test

1. Enter in Service Mode (see Section 4)
2. Verify all inputs and outputs for proper operation. (see Section 4)
3. While in outputs menu in Service Mode, verify for smooth operation of doors and travelers.

7.5 CYCLE TEST

1. If in Service Mode, press STOP RESET until main Service Mode Menu appears then press EXTEND CYCLE to enter in Automatic Mode.
2. Press DOOR CLOSE (on both sides if double doors unit).
3. Produce a printout of all Cycles Values (see Section 4)
4. Erase the fourth cycle of the Main Cycle Menu to set back factory default values. The name of this cycle should now be PRIMATE (if not already selected) (see Section 4)
5. Washer is now in Idle Mode, waiting for a cycle to be started.

Verify:

- Air regulator on washer can be adjusted at a minimum of 100 psig (6.9 bar).
 - Maximum temperature of cold tap water is 70°F (21°C) (option).
 - Interior light turned ON.
 - Doors are closed and pressurized.
 - Green indicator light is turned ON on load side.
 - Red indicator light is turned OFF on unload side (if double door unit).
 - Sump drain valve and suction pump drain valve are open [AC5/2].
 - Tanks are full (if not in filling process).
6. Press SELECT CYCLE to select PRIMATE then press CYCLE START.

7. Cycle preparation starts and display shows:

**PRIMATE
PRIMING**

STARTING

then:

PRIMATE

**STARTING
00:15**

NOTE: If neutralizing system and/or cooldown tank options are present, cycle may be paused between treatments to allow neutralization and/or cooldown of washing solution before draining.

Verify:

- Green indicator light turns OFF and red indicator light turns ON (on both sides if double doors unit).
- Exhaust fan starts.
- Suction pump and sump drain valve [AC5/2] close.
- Tank 2 recirculation outlet valve [AC3/4] and suction pump filling valve [AC4/2] open for 3 sec. and then close (priming sequence).
- Buzzer sounds for 15 seconds.
- Remaining time on display decrease.
- Suction piping drain valve [AC8/4] opens.
- Pressure piping drain valve [AC7/4] opens.
- Suction pump starts.
- Interior light turn OFF for 1 sec. and then turn ON.
- Chemical injection process starts in tanks.
- Floor tilt raises (option).

8. PRE-WASH treatment starts and display shows:

**PRIMATE
CIRCULATE**

**PRE-WASH
00:20**

alternating with:

**PRIMATE
PRESSURE**

**PRE-WASH
XXX PSIG**

Verify:

- Pressure piping drain valve [AC7/4] closes.
- Traveler system starts.

- Tank 2 recirculation outlet valve [AC3/4] opens.
- Pressure pump starts.

After treatment is completed:

- Traveler system stops.
- Pressure pump stops.
- Tank 2 recirculation outlet valve [AC3/4] closes.
- Pressure piping drain valve [AC7/4] opens for 25 seconds to let suction pump empty sump.
- Pressure piping drain valve [AC7/4] closes.
- Suction piping drain valve [AC8/4] closes.
- Suction pump stops.
- Filling process of tank 2 starts.

9. Wash 1 treatment starts and display shows:

PRIMATE CIRCULATE	WASH 1 06:00
alternating with...	
PRIMATE SET POINT	WASH 1 130.0 F
and...	
PRIMATE WAT TEMP	WASH 1 XXX.X F
and...	
PRIMATE PRESSURE	WASH 1 XXX PSIG

Verify:

- Travelers system starts.
- Tank 1 recirculation outlet valve [AC1/4] opens.
- Pressure pump starts.
- Suction pump starts.
- Suction piping drain valve [AC8/4] opens for 12 seconds, then closes.
- Tank 1 recirculation inlet valve [AC0/4] opens.
- Remaining time on display decreases.
- If water temperature is below set point, in-line

heat exchanger steam valve opens [AC12/3] until temperature set point is reached.

Note: Wash 1 treatment is not guaranteed as remaining time decreases even if temperature set point is not reached

After treatment is completed:

- In-line heat exchanger steam valve [AC12/3] closes (if open).
- Traveler system stops.
- Pressure pump stops.
- Tank 1 recirculation outlet valve [AC1/4] closes.
- Pressure piping drain valve [AC7/4] opens for 25 seconds and then closes.
- Suction pump stops.
- Filling process of Tank 1 starts.

10. Wash 2 treatment starts and display shows:

PRIMATE CIRCULATE	WASH 2 06:00
alternating with...	
PRIMATE SET POINT	WASH 2 160.0 F
and...	
PRIMATE WAT TEMP	WASH 2 XXX.X F
and...	
PRIMATE PRESSURE	WASH 2 XXX PSIG

NOTE: If second wash tank is not present, Wash 2 treatment is skipped and Final Rinse starts.

Verify:

- Travelers system starts.
- Tank 3 recirculation outlet valve [AC5/4] opens.
- Pressure pump starts.
- Suction pump starts.
- Suction piping drain valve [AC8/4] opens for 12 seconds, then closes.

- Tank 3 recirculation inlet valve [AC4/4] opens.
- Remaining time on display decrease.
- If water temperature is below set point, in-line heat exchanger steam valve [AC12/3] opens until temperature set point is reached.

NOTE: Wash 2 treatment is not guaranteed as remaining time decreases even if temperature set point is not reached.

After treatment is completed:

- In-line heat exchanger steam valve [AC12/3] closes (if open).
- Traveler system stops.
- Pressure pump stops.
- Tank 3 recirculation outlet valve [AC5/4] closes.
- Pressure piping drain valve [AC7/4] opens for 25 seconds, then closes.
- Suction pump stops.
- Filling process of tank 3 starts.

11. Final rinse treatment starts and display shows:

PRIMATE CIRCULATE	FINAL RINSE 02:00
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alternating with...

PRIMATE SET POINT	FINAL RINSE 185.0 F
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and...

PRIMATE WAT TEMP	FINAL RINSE XXX.X F
-----------------------------	--------------------------------

and...

PRIMATE PRESSURE	FINAL RINSE XXX PSIG
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Verify:

- Travelers system starts.
- Tank 2 recirculation outlet valve [AC3/4] opens.
- Pressure pump starts.
- Suction pump starts.
- Suction piping drain valve [AC8/4] opens for 12 seconds then closes.

- Tank 2 recirculation inlet valve [AC2/4] opens.
- Tank 2 fill valve open [AC9/3] to add 25 litres of water in Tank 2 then closes.
- Remaining time on display decreases only if temperature set point is reached.
- If water temperature is below set point, in-line heat exchanger steam valve [AC12/3] opens until temperature set point is reached.
- Dynamic steam pressure is between 50 and 80 psig (3.4 - 5.5 bar).
- Pressure pump pressure is between 90 and 130 psig (6.2 - 9.0 bar).
- Suction pump pressure oscillates between 5 psig and 25 psig (0.3 - 1.7 bar).
- Temperature on load.

NOTE: Final rinse treatment is guaranteed as remaining time decreases only if temperature set point is reached.

After treatment is completed:

- In-line heat exchanger steam valve [AC12/3] closes (if open).
- Traveler system stops.
- Pressure pump stops.
- Tank 2 recirculation outlet valve [AC3/4] closes.
- Pressure piping drain valve [AC7/4] opens for 25 seconds then closes.
- Suction pump stops.
- Filling process of Tank 2 starts.

12. Exhaust treatment starts and display shows:

PRIMATE VAPOR REM	EXHAUST 01:00
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Verify:

- Sump and suction pump drain valves [AC5/2] open.
- Damper opens.
- Exhaust fan starts.
- Remaining time on display decreases.

After treatment is completed:

- Damper closes.
- Exhaust fan stops.

13. Drying treatment starts and display shows:

PRIMATE DRYING	DRYING 10:00
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alternating with...

PRIMATE SET POINT	DRYING 180.0 F
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and...

PRIMATE DRY TEMP	DRYING XXX.X F
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NOTE: If drying system option is not present, drying treatment is skipped and cycle is completed.

Verify:

- Damper opens.
- Exhaust fan starts.
- Drying fan starts.
- If air temperature is below set point, drying heat exchanger steam valve [AC13/3] opens until temperature set point is reached.
- Remaining time on display decreases.
- Temperature at exhaust.

NOTE: Drying treatment is not guaranteed as remaining time decreases even if temperature set point is not reached.

After treatment is completed:

- Drying heat exchanger steam valve [AC13/3] stops (if open).
- Damper closes.
- Exhaust fan stops.
- Drying fan stops.

14. Cycle is completed and display shows:

**PLEASE OPEN DOOR
AND REMOVE THE LOAD**

Verify:

- If double door unit, red indicator light turns OFF and green indicator light turns ON on unload side

- If single doors unit, green indicator light turn ON on load side.
- Buzzer sounds
- Control waits for doors to be opened.

15. Press DOOR OPEN (on unload side if double doors unit) and remove load.

16. Press DOOR CLOSE.

Verify (if double door unit):

- On unload side: red indicator light turns ON and green indicator light turns OFF
- On load side: red indicator light turns OFF and green indicator light turns ON.

17. Display returns to Main Cycle Menu.

Section 8: Component Repair and Replacement

! WARNING - PERSONAL INJURY AND/OR EQUIPMENT DAMAGE HAZARD: Only fully qualified service personnel should make repairs and adjustments to this equipment. Maintenance done by inexperienced, unqualified personnel or installation of unauthorized parts could cause personal injury, invalidate warranty or result in costly damage. Contact your STERIS sales or service representative regarding service options.

! WARNING - ELECTRIC SHOCK AND/OR BURN HAZARD: Disconnect all utilities before servicing. Do not service unit unless all utilities have been properly locked out.

! WARNING - ELECTRIC SHOCK AND/OR BURN HAZARD: Lock building electrical supply disconnect switch in OFF and close unit supply valves before performing any service on the unit. If unit is started during maintenance procedures, hot water/steam may be sprayed into unit.

! WARNING - ELECTRIC SHOCK AND/OR BURN HAZARD: Lock building electrical supply disconnect switch in OFF position and depressurize valves (main and auxiliary lines) before making repairs.

! WARNING - ELECTRIC SHOCK AND/OR BURN HAZARD: Fasteners and star washers are used to ensure protective bonding continuity. Always re-install any star washer which may have been removed during installation or servicing.

! WARNING - LACERATION HAZARD: When removing bolts, wear gloves to protect your hands.

! WARNING - FALL HAZARD: To prevent falls, keep floors dry. Promptly clean up any spills or drippage.

! WARNING - BURN HAZARD: Inner surfaces of washer are very hot after cycle completion.

! WARNING - BURN HAZARD: Allow piping to cool down before performing any service on the pump. Piping and valves become very hot during unit operation.

! WARNING - BURN HAZARD: After pressing STOP/RESET touch pad wait until water stops before opening door. Hot water/steam may be sprayed through door opening if door is opened too soon.

8.1 HOW TO CLEAN SUMP # 117989-144 (FIGURE 9-4A)

1. Lower manifold connector (49) (option) on the central floor section before lifting the central floor section (9).
2. Remove three floor gratings sections using handles (lift sections and carry out of wash chamber).
3. Remove all debris present in bottom of sump. Remove large debris to avoid clogging of sump drain hole present below suction plate (15).
4. Remove small debris using a hose, directing debris toward sump drain hole located under suction plate. Sump drain valve is opened (Fig. 9-4 b # 16) when unit is in Ready Mode.

8.2 HOW TO REPLACE SUCTION PLATE # 117996-366 (FIGURE 9-4A)

Suction Plate (15) is located at the bottom of the sump in wash chamber.

1. Remove floor grating side section (8) over suction plate.
2. Untighten (but do not remove) wing nuts (55) on edge of suction plate. Turn suction plate holding brackets aside.
3. Unscrew and remove wing nut from center of suction plate.
4. On rubber hose (13), loosen clamp (14) next to wall. Do not remove clamp.
5. Slightly lift suction plate to free plate from sump.
6. Slide plate with hose towards center of wash chamber until hose touches floor edge, then, slide to the left and lift at angle.

IMPORTANT: Remove any debris at the bottom of the sump. Do not push debris into sump drain hole. Remove any debris trapped into sump drain hole.

To re-install suction plate:

- a. Slide plate back into place and insert rubber hose on sump connection.
- b. Replace and tighten central wing nut.
- c. Turn suction plate holding brackets to original position and tighten wing nuts.

IMPORTANT: Tighten hose clamp firmly to prevent air from entering pump.

8.3 HOW TO REPLACE AUTOMATIC FLOOR TILT CYLINDER # 117909-455 AND ADJUST SPEED (FIGURE 9-4A)

1. Position and close unit air supply valve.
2. Press EMERGENCY STOP button to purge air line.
3. Lock electrical disconnect switch to OFF position.
4. Let machine piping cool down.
5. On the left bottom portion of the mechanical core, disconnect quick disconnect clamps (Fig. 9-18 #2) on suction pump return piping and remove piping.
6. Remove both hitch pins (31) securing cylinder (33).
7. Remove cylinder (33), clevis (34) and the pneumatic micrometric valves (32) (note position of clevis on cylinder shaft).
8. Re-install clevis on the new cylinder.
9. Re-install micrometric valves on the new cylinder.
10. Re-install cylinder and make pneumatic connections.
11. Adjust automatic floor tilt stroke if necessary (see Section 8.4).
12. Enter SERVICE MODE to access Test Outputs menu (see Section 4).
13. Use **ft** (floor tilt) touch pad (Fig. 9-14a #3) to lift/lower floor tilt.

NOTE: To activate **ft** touch pad, doors must be closed.

NOTE: To adjust floor tilt speed control, use *Free-In controlled Flow-Out technique*.

14. Untighten Allen screw on Flow Control Adjust-

ment screw (32) on cylinder (Fig. 9-4a).

15. Adjust door speed using appropriate flow control (32) so that floor tilts within 2 to 4 seconds.
16. Tighten Allen screw on Flow Control Adjustment screw.

8.4 HOW TO ADJUST AUTOMATIC FLOOR TILT STROKE (FIGURE 9-4A)

1. Lock electrical disconnect switch in OFF position and close unit supply valves.
2. Let machine piping cool down.
3. On the left bottom portion of the mechanical core, disconnect quick disconnect clamps (Fig. 9-18 # 2) on suction pump return piping and remove piping.
4. Remove floor tilt shaft (39) and hitch pin (31) securing cylinder to floor tilt lever (36) (Figure 9-4a).
5. Rotate clevis (34) until left floor tilt shaft (26) is approximately 1/8" (0,2 mm) from the plastic block (28) located below floor frame (7) inside wash chamber and re-attach with hitch pin (31).
6. Lock clevis in place with jam nut and re-attach with hitch pin.
7. Repeat adjustment for right floor tilt rod using floor tilt shaft linking both levers (Figure 9-4a).

8.5 HOW TO REPLACE FLOOR TILT RODS, BUSHINGS # 117909-429 OR O'RINGS # 117956-047 (FIGURE 9-4A)

1. Lock electrical disconnect switch in OFF position and close unit supply valves.
2. Let machine piping cool down.
3. Twist and lower manifold coupling (49), remove floor grating sections (8,9), using handles (10).
4. On left bottom portion of mechanical core, disconnect quick disconnect clamps (Fig. 9-18 # 2) on suction pump return piping and remove piping.
5. Remove all shafts (39) and hitch pins (31) securing cylinder and auto-tilt shaft to the floor tilt levers (36, 40) (keep for re-installation).
6. Remove socket head screws # 117957-221 (38) holding square key # 117996-387 (37) in place on both floor tilt levers (36, 40).

7. Remove square key and floor tilt levers.
8. From the inside of the wash chamber, unscrew the Auto-tilt Floor Cap plugs (24).
9. From inside of wash chamber, pull on the auto-tilt shafts (26).
10. Replace bushings (56, 21) and O-Rings (23) as necessary.
11. Re-install auto-tilt shaft, bushings and O-Rings.
12. Tighten auto-tilt floor bushings.
13. Re-install floor tilt levers, square key and set screws.
14. Re-attach cylinder and auto-tilt floor shaft.
15. Adjust speed and stroke (see 8.3 and 8.4).

8.6 HOW TO REPLACE WASH CHAMBER STICKERS

1. Lock electrical disconnect switch in OFF position and close unit supply valves.
2. Let interior of unit cool down.
3. Remove old stickers and adhesive, using remover and a plastic scraper.
4. Scrub surface with isopropyl alcohol to remove residue.
5. Re-install stickers, making sure not to put fingers on the sticking surface extremities.

NOTE: On Safety Rail (Fig. 9-7 # 20), make sure that stickers do not exceed safety handle surface.

8.7 HOW TO REFILL AIR/OIL TANKS # 117-909-945 (FIGURES 8-1 AND 9-6A)

⚠ WARNING - EQUIPMENT DAMAGE HAZARD:
Before removing plugs on Air/Oil Tanks, make sure doors are in closed position and all door outputs are de-activated.

1. Press **SELECT CYCLE** twice to access Air/Oil tanks Outputs menu (03). Display shows:

o3	o2	i3	o3	pd	sd	ol
cl	or	dp	ft			
2. When Air/Oil Tanks Outputs menu (03) is flashing, move **CURSOR** (right) to **ol** (Open Left). Press **VALUE** (up) to activate output (OL). Doors open. Press **VALUE** (down) to de-activate output (ol). Doors remain open.

3. Press **CURSOR** (right) to move to **cl** (Close Left). Press **VALUE** (up) to activate **CL**. Doors close. Press **VALUE** (down) to de-activate output (**cl**). Doors remain closed.
4. Repeat steps 1 to 3, at least four times to make sure all air has been removed from cylinder.
5. If double door unit, repeat steps 1 to 4 for right side outputs: **or** (Open Right) and **cr** (Close Right).
6. Once all air has been removed from cylinders and doors are de-activated, (**cr, cl**) on single door units and (**cr, cl, or, ol**) on double door units, check oil level in Air/Oil tanks on top of washer (see Figure 8-1).

NOTE: Make sure all door outputs are de-activated before removing plugs on Air/Oil tanks. If outputs are not de-activated, air pressure will blow oil out of the tanks.

7. There are two Air/Oil tanks on a single-door unit (Tanks 1 and 2) and four tanks on a double-door unit (Tanks 1, 2, 3 and 4) (see Figure 8-1).
8. Oil level in tanks should be adjusted at 1-1/2" (380 mm) in Tank 1 and at 7" (1178 mm) in Tank 2). Oil level will alternate when doors open and close.
9. If oil level is not correct, remove plugs on Air/Oil tanks (see Figure 8-1).

NOTE: Make sure all door outputs are de-activated before removing plugs on Air/Oil tanks. If outputs are not de-activated, air pressure will blow oil out of the tanks.

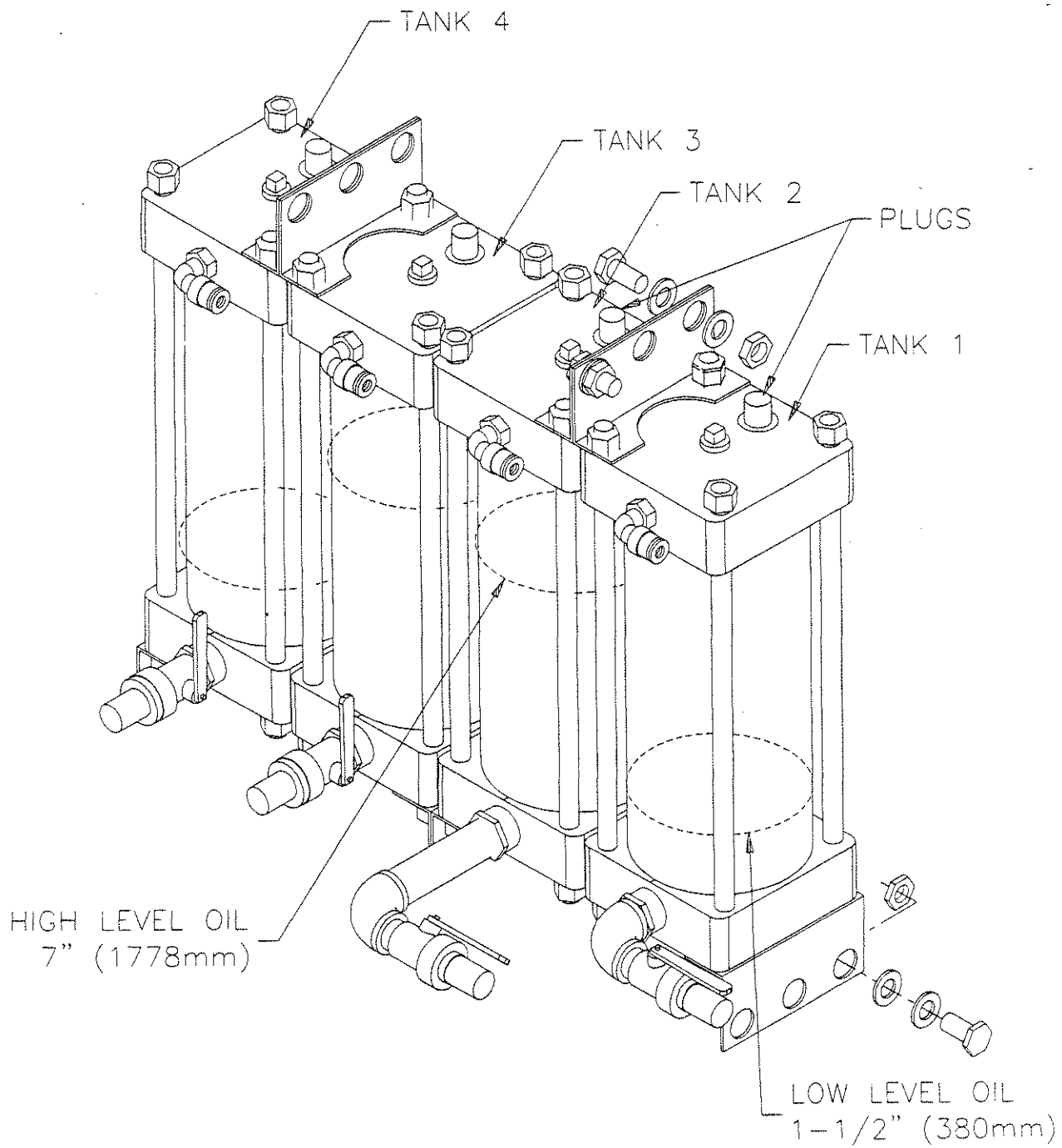
10. Fill tanks until oil level in Tank 1 reaches 1-1/2" (380 mm) in and 7" (1178 mm) in Tank 2) (see Figure 5-3) If double door unit, repeat operation for Tank 3 (7" [1178 mm]) and Tank 4 (1-1/2" [380 mm]).

NOTE: Never fill all tanks to the top (see Fig. 8-1).

8.8 HOW TO REPLACE AIR/OIL TANKS # 117909-945 (FIGURES 8-1 AND 9-6A)

1. Lock electrical disconnect switch in OFF position and close unit supply valves.
2. Close manual valves (18) to prevent oil spill.
3. Disconnect tank (11) from air tubing and from oil tubing (keep oil tubing up to avoid spill).
4. Remove bolts (16), lock washers (15) and flat washers (14) from tank attachments.
5. Remove tank assembly and replace with new one.

Oil levels when doors are in closed position.



REF.: #920-006-429

Figure 8-1. Air/Oil Tanks

6. To fill air/oil tanks, see 8.7 "How to Refill Air/Oil Tanks".

8.9 HOW TO CHECK FOR OIL IN DRIP PANS # 117-998-093 (FIGURE 9-6A)

1. Lock electrical disconnect switch in OFF position and close unit supply valves.
2. Remove Front Service Panel (Fig. 9-5 #17) located above doors.
3. Remove wick (49).
4. Wipe off oil from cylinder drip pans (50).
5. Re-install new wick.
6. Check for proper operation of door cylinder (26).
7. Re-install front service panel.
8. Replace cylinder if leaking.


8.10 HOW TO PRIME PNEUMATIC DOOR CYLINDERS # 117909-443 (FIGURES 8-1 AND 9-6A)

1. Lock electrical disconnect switch in OFF position and close unit supply valves.
2. Remove front service panels (Fig. 9-5 #17) located above doors.
3. Doors must be closed.
4. Remove dowel pin (58) securing cylinder clevis (57) to door cylinder arm (62).
5. Oil (12) must have a 1-1/2" inside air/oil tank (11) and the other air/oil tank must be at the high level line inside air/oil tank. Remove plug (10) and re-fill as necessary in both tanks.

NOTE: In a double door unit, there are four air/oil tanks. Middle tanks must have a high oil level when doors are closed.

6. Replace copper plug on air/oil tank. Completely pull out and push in cylinder rod several times to evacuate a maximum of air inside air lines.
7. Maintain cylinder closed with cylinder rod pushed in. Verify if oil level is up to the highest level line in air/oil tank.
8. Pull out cylinder rod. Oil level must inverse in air/oil tanks.
9. Verify oil level and repeat procedure as in point 5 if necessary.

8.11 HOW TO ADJUST DOOR SPEED (FIGURE 9-6A)

 **WARNING - PERSONAL INJURY HAZARD:** When doors are closing, a pinch point is created at the hinges. Keep fingers away from door hinges in order to prevent pinching fingers.

1. Remove Front Service Panel (Fig. 9-5 #17) located above doors.
2. Enter SERVICE MODE to access Test Outputs menu (see Section 4).
3. Use **ol** (open left), **cl** (close left), **or** (open right), **cr** (close right) touch pads (Fig. 9-14a #3) to open/close left and right automatic doors.

NOTE: To adjust door speed control, use Free-In controlled Flow-Out technique.

4. Untighten Allen screw on Flow Control Adjustment screw (28).
5. Adjust door speed using appropriate flow control (28) so that doors open/close within 5 to 6 seconds.
6. Tighten Allen screw on Flow Control Adjustment screw.

8.12 HOW TO REPLACE DOOR PNEUMATIC CYLINDERS # 117909-443 (FIGURE 9-6A)


1. Lock electrical disconnect switch in OFF position and close unit supply valves.
2. Remove Front Service Panel (Fig. 9-5 #17) located above doors.
3. Remove dowel pin (58) and hitch pin (30) securing cylinder clevis (57) to door bracket and cylinder base support (46).
4. Remove DOOR CLOSE limit switch (47) using Allen hex key.
5. On air/oil tanks (11), close manual ball valves (18).
6. Unscrew appropriate pneumatic valves fitting (27) located on cylinder.
7. Plug hose to keep oil in line.

NOTE: Oil in hose may leak. Use a container to prevent any spills.

8. Remove cylinder (26).
9. Remove flow control valves (28) with elbow (31) from old door cylinder. Discard old one.

10. Re-install flow controls on the new automatic door cylinder in same position. Use appropriate pneumatic sealant compound.
11. Re-install cylinder, hitch pins and automatic DOOR CLOSE sensor.
12. Re-connect oil tubing. Make sure tubing is completely inserted into adaptor before tightening.
13. To perform priming, refer to 8.10 "How to Prime Pneumatic Door Cylinders".
14. Re-energized washer and enter SERVICE MODE.
15. To adjust speed, refer to 8.11 "How to Adjust Door Speed."
16. To perform sensor adjustment, refer to 8.63 "How to Adjust Automatic Door Sensor"
17. In SERVICE MODE, open and close doors and perform final test.

8.13 HOW TO REPLACE DOORS CABLE PULLEYS # 117003-598 AND/OR BEARINGS # 117909-926 (FIGURE 9-6 A)

 **CAUTION: Misadjusted pulley guards will result in immediate cable damage.**

1. Doors must be closed.
2. Lock electrical disconnect switch in OFF position and close unit supply valves.
3. Remove front service panels (Fig. 9-5 # 17) located above doors.
4. Loosen nuts from pulley support (68).
5. Loosen bolt and nut to release tension from bender (75).
6. Remove cotter pin (59), remove door cable (74, or 48).
7. Loosen cable around from pulley (69).
8. Unscrew bolt (73) and nut (67).
9. Remove pulley guard (72), pulley (69), bearing (71) and bushing (70).
10. Replace and re-install components in reverse order.
11. Adjust pulley guard at 45° angle according to cable angle.
12. Re-install cable. Make sure long end of cable is installed on opposite door arm cylinder.
13. To adjust cable tension: Tighten bender until there is a 1/2" gap between doors (from outside washer).

8.14 HOW TO REPLACE CENTRAL DOOR GASKETS # 117909-513 (FIGURE 9-6 D)

1. Lock electrical disconnect switch in OFF position and close unit supply valves.

From inside wash chamber:

2. Remove truss head screws (11) holding central deflector (12) to the "C" shaped door frame.
3. Pull out gasket (9) from gasket holder and replace with a new one.
4. Re-install central deflector.
5. Verify for proper door operation.

8.15 HOW TO REPLACE OR ADJUST AUTOMATIC DOOR SIDE GASKETS # 117997-373 (FIGURE 9-6D)

1. Lock electrical disconnect switch in OFF position and close unit supply valves.
2. From inside wash chamber, manually close doors.
3. Remove cap nuts (4) and washers (3) from side gasket holder and remove side gasket holder along with side door gasket (1).
4. Re-install holder and new gasket.
5. Enter SERVICE MODE to verify if gasket slides smoothly inside chamber (see Section 4).

8.16 HOW TO REPLACE AUTOMATIC DOOR ROLLERS # 117989-165 AND/OR DOOR PIVOT WITH BUSHINGS #117005-836 (FIGURE 9-6B)

1. Open doors.
2. Lock electrical disconnect switch in OFF position and close unit supply valves.
3. Remove front service panels (Fig. 9-5 # 17) located above doors.
4. Enter wash chamber by opening doors manually.
5. Remove interior duct. Refer to 8.40 "How to Replace Exhaust Duct Gasket."
6. Remove self locking nut and pull out door roller pivot and spacer holding roller.
7. Untighten door pivot. Pull out pivot, spacer and bushings. replace if necessary.

8. Re-install new door roller and/or pivot and bushings using previously removed spacers and nuts.
9. Repeat for each door roller.

8.17 HOW TO REPLACE DOOR PIVOT BUSHINGS # 117989-164 (FIGURE 9-6B)

1. Lock electrical disconnect switch in OFF position and close unit supply valves.
2. Refer to 8.24 "How to Replace Door Frames."
3. Remove door frame.

! WARNING - PERSONAL INJURY HAZARD - When doors are closing, a pinch point is created at the hinges. Keep fingers away from door hinges in order to prevent pinching fingers.

! WARNING - PERSONAL INJURY HAZARD - When installing/removing chamber doors, use two people. Chamber doors are heavy.

4. Once doors are removed, unscrew door pivot arm (3) and replace arm pivoting bushings (5).
5. Re-install door frames and door panels.

8.18 HOW TO ADJUST EMERGENCY EXIT DOOR SAFETY SYSTEM (FIGURE 9-6C)

! WARNING - PERSONAL INJURY AND/OR EQUIPMENT DAMAGE HAZARD: To open doors from inside wash chamber, press Emergency Stop Guard Rails. Washer operation automatically stops. Then push firmly between door panels using shoulder and upper arm, applying upper body force. Do not push between the two doors but between the door panels.

! WARNING - PERSONAL INJURY AND/OR EQUIPMENT DAMAGE HAZARD: To test or demonstrate Emergency Exit Safety Doors, first press EMERGENCY STOP pushbutton(s) (located under control or Emergency Safety Guard Rails (inside wash chamber) to turn power OFF. If power is still on while adjusting or servicing doors, the Photoelectric Sensor will detect the movement of the door panels and doors will open automatically.

1. Lock electrical disconnect switch in OFF position and close unit supply valves.

NOTE: It is very important to turn off the unit. If unit is not turned off, door panels could trigger the automatic load detection sensor and trigger opening of doors.


2. Enter wash chamber and close doors manually.

! CAUTION: EQUIPMENT DAMAGE HAZARD: Each baffle is specific to door panel on which it is installed. Before removing baffle, clearly identify each baffle to match door panel.

3. Push hard between door panels (10, 13) to open.
4. If emergency exit doors safety system is jammed, using a screw driver, untighten upper door latch (19) on door panels, push again between door panels to open.
5. Maintain door panels opened. Manually raise door panels (one at a time) and verify that pivot (11) movement is free up and down of approximately 1/4 inches.
6. If there is resistance to pivot movement, section door must be removed to set upper pivot free.
7. Adjust emergency exit door panels one at a time.
8. Close one door panel and slide bottom door lock into "C" shaped frame (25, 26) secure washers.
9. Maintaining door closed, raise upper door latch (19) until shifting next door latch. Secure washers (17, 18) and close Emergency Exit Door.
10. Verify that Emergency Exit Door Safety System functions correctly. Repeat adjustment if necessary.
11. Repeat steps 3 through 9 until safety door panels maintain a secure fit.

! WARNING - PERSONAL INJURY AND/OR EQUIPMENT DAMAGE HAZARD: To test or demonstrate Emergency Exit Safety Doors, first press EMERGENCY STOP pushbutton(s) (located below control or Emergency Stop Guard Rails (inside wash chamber) to turn power OFF. If power is still on while adjusting or servicing doors, the Photoelectric Sensor will detect the movement of the door panels and doors will open automatically.

12. Test Emergency Exit Door Safety System.
13. Once Emergency Exit Door Safety System has been adjusted, enter SERVICE MODE to verify for proper door operation.

 **WARNING - PERSONAL INJURY AND/OR EQUIPMENT DAMAGE HAZARD:** Do not enter in Automatic Mode to adjust door safety switches. If unit is in Automatic Mode and Load Sensor has been enabled, doors could open automatically if sensor detects an object while adjusting safety switches.

8.19 HOW TO REPLACE GLASS WINDOW # 117910-230 OR WINDOW GASKET # 117910-229 (FIGURE 9-6C)

1. Lock electrical disconnect switch in OFF position and close unit supply valves.
2. From the outside of doors, remove outside windows (2).
3. Lift fixture glass (1).
4. From inside wash chamber, remove bolts and washers (27, 28, 29) holding window frame (4) in place.
5. Outside washer, remove window frame, and interior window (3) along with silicone gasket (5).
6. To remove silicone insert a gasket scraper underneath external window frame and clean area.
7. Replace silicone gasket (5).
8. Spread a bead of silicone around interior door surface window opening (1/8" wide only).
9. Re-install window frame (4) using previously removed bolts and washers.
10. Tighten bolts.
11. Enter AUTOMATIC MODE to verify window for leaks. Tighten bolts if necessary.

8.20 HOW TO REPLACE BOTTOM DOOR GUIDE GASKETS # 117003-528 (FIGURE 9-6E)

1. Lock electrical disconnect switch in OFF position and close unit supply valves.
2. Doors must be closed.
3. Untighten screws (1) and washers securing door bottom support (3).
4. Remove gasket support (3) and old gasket (4).
5. Install new gasket. Gasket should touch floor but should not force against floor.

6. Re-install gasket support using previously removed bolts.
7. Enter AUTOMATIC MODE to verify if gasket slides smoothly and there is no space between floor and gasket.

8.21 HOW TO REPLACE AUTOMATIC DOOR BOTTOM GUIDING ROLLERS # 117997-505 (FIGURE 9-6E)


1. Lock electrical disconnect switch in OFF position and close unit supply valves.
2. Remove lower door deflector(s) lower gasket supports (3) and bottom door roller support (8).
3. Remove screws (6) and bottom roller (7).
4. Replace new roller and screws.
5. Enter SERVICE MODE to verify for proper door operation.


8.22 HOW TO REPLACE TOP DOOR GASKET #117003-532 (FIGURE 9-6E)

1. Lock electrical disconnect switch in OFF position and close unit supply valves.
2. From inside washer: Remove upper deflector (12, 13) and replace new gasket (14).

8.23 HOW TO REPLACE DOOR PANELS (FIGURE 9-6C)

NOTE: When removing doors, two people are required.

 **WARNING - PERSONAL INJURY HAZARD:** When installing/removing chamber doors use two people. Chamber doors are heavy.

 **WARNING - PERSONAL INJURY HAZARD:** When doors are closing, a pinch point is created at the hinges. Keep fingers away from door hinges in order to prevent pinching.

1. Lock electrical disconnect switch in OFF position and close unit supply valves.
2. Enter wash chamber and manually close doors.
3. From inside wash chamber push firmly between door panels to open Emergency Doors.
4. From outside washer close door panel to be changed.

5. Using a 3/32" Allen hex key untighten bottom screw (12) located at the bottom of door panel. Lower key along slot and tight.
6. Unscrew ground cable from top of door panel.
7. Remove door panel by lifting it. Slide door panel out from door frame.
8. To re-install door panel, align top and bottom bolts. Slightly lift door panel to adjust into lower rod by pushing door panel at the bottom. Tighten bottom screw using allen key Lock in upper position.
9. Install ground cables.
10. To close door sections, fold left side panel into right side panel, then press panels firmly into place.

8.24 HOW TO REPLACE DOOR FRAME (FIGURES 9-6 A TO 9-6C)

1. Lock electrical disconnect switch in OFF position and close unit supply valves.
2. Remove front service panels (Figure 9-5 #17) located above doors.
3. Unscrew two bolts holding each door cylinder arm (Fig. 9-6a # 62, 64) to the door.
4. Remove door panels. Refer to 8.23 "How to Replace Door Panels."
5. Manually push door frames into open position.
6. Remove right and left ventilation ducts (door pulley protection guards) and ventilation duct inside wash chamber. Refer to 8.40 "How to Replace Exhaust Duct Gasket" inside wash chamber.
7. Inside wash chamber, remove stopper plates (13) located in front of roller bracket (16) (Fig. 9-6 b)
8. On two other door rollers, remove roller stoppers (Fig. 9-6b #12) that prevent doors from lifting off door rail (outward pulley assemblies only) by removing screw (8, 11). Refer to 8.16 How to Replace Automatic Door Rollers.

NOTE: When removing door frames, two people are required.

9. Grasp door assembly on both sides, tilting bottom of door slightly towards exterior (20° angle), then push door up and out of door rails.
10. Repeat for each door frame to be replaced.
11. Re-install door frames in reverse order and make necessary adjustments.

12. Re-install door panels. Refer to 8.23 "How to Replace Door Panels."
13. Enter SERVICE MODE to verify proper door operation.

8.25 HOW TO ADJUST TRAVELER SYSTEM CABLE TENSION (FIGURES 9-8 A, B AND C)

1. Inside wash chamber, loosen bolts on bottom pulleys (service and non-service side) (Fig. 9-8b).
2. Lift bottom pulleys and tighten bolts.
3. Outside wash chamber, loosen bolts on one of the cable attachment plate (Fig. 9-8 A, #23) located on pneumatic cylinder.
4. Pull cable and tighten cable guide bolts.
5. To complete adjustment, inside wash chamber, loosen bolts (5) (11) on bottom pulleys (Fig. 9-8b), adjust pulleys down and tighten bolts to secure.
6. To verify cable tension, inside wash chamber, bring both travelers (Fig. 9-8 C # 9, 10) at approximately the same height (guard rail level).
7. At about 12 inches (30 cm) above or below spray header (Fig. 9-8C # 1, 2), slightly pull on cable towards center of washer (approximately 5 lbs. force). There should be a distance of 2-3/4 to 3 inches (7 to 7,5 cm) between cable and Spray Header Sliding Guide (Fig. 9-8 B #1).

8.26 HOW TO REPLACE SPRAY HEADER TRAVELER CABLES # 117999-314 (FIGURES 9-8A, B, C)

NOTE: Remove floor gratings from bottom of wash chamber.

• From outside, on service side:

1. Connect cable to cable attachment (20), run it under attachment plate (23) from left. Be sure cable is inserted into retention plate groove. Leave approximately 1 inch (2.5 cm) of slack in cable. Tighten bolts.
2. Insert cable between pulley guard (34) and left wing pulley (35).
3. Insert cable between pulley guard and central left pulley.
4. Pass cable through left gasket cable guide (26, 27).

• From inside unit:

5. Inside washer apply tension to cable. Position cable around top left inside pulley (Fig. 9-8b #10). Make sure cable does not touch guards (8). Guards should be positioned at a 45° angle.
6. Insert cable between guard and left pulley. (Pulley nearest to wall seen from inside).
7. Run cable along service side wall. Pass cable between lower service side pulley. Verify pulley is adjusted into highest point. If not, loosen and adjust to highest point.
8. Run cable beneath floor frame until it reaches low non-service side pulley. Insert cable between guard and pulley. Be sure cable is not blocked between floor frame and sump frame.
9. Pass cable between spray header (1, 2) and roller mechanism (9, 10) (Fig. 9-8c). Pass cable through upper non-service side right pulley. Apply cable tension. Be sure cable is correctly inserted in all pulleys and not touching any pulley guard.
10. Run cable across towards service side wall. Run cable through left hole (seen from inside) into cable guide (27).
 - From outside unit:
11. Pull out cable from hole and insert between guard and right central pulley.
12. Insert cable between guard and right wing pulley on traveler mechanism support.
13. Secure cable end to attachment plate (23). Apply tension and tighten bolts.
14. Position retention plate block on service side at left end of cylinder. Be sure that retention plate is at the end of the stroke.
15. Re-install floor gratings.
 - From inside of unit, on service side:
16. Position center of non-service side spray header tubing at 7-1/2", +/- 1/8" (18.5 cm, +/- 7 mm) from top of ceiling to center of spray nozzle.
17. Insert cable into right cable plate (12) and tighten bolts.
 - From outside washer:
18. Move cylinder cable retention plate to right end.
 - From inside unit, on service side:
19. Lift service side traveler mechanism until spray header tubing is 7- 1/2", +/- 1/8" (18.5 cm +/- 7 mm) from ceiling to center of spray nozzle.
20. Insert cable into left retention plate block and tighten bolts.

21. From inside of unit, on non-service side, lower spray header to lowest point. Verify that mechanism doesn't touch lower part of support or pulleys before cylinder has completed a full course (from outside unit). Traveler movement should be stopped by cylinder stroke.

22. Repeat same procedure on service side. Verify that cable is not in contact with guards.

NOTE: To adjust cable tension, untighten one of the lower pulleys, and lower it into slot until desired tension is reached.

8.27 HOW TO REPLACE AND/OR ADJUST SPRAY HEADERS SAFETY CABLE # 11799-315 (FIGURES 9-8, 9-8 B, C)

1. Identify Safety Cable (5): both ends of Safety Cable are located on spray header cable attachments (Fig. 9-8c # 12) located inside wash chamber.
2. Loosen bolts on one spray header cable attachment (the one securing safety cable).
3. At about 12 inches (30 cm) above spray header, slightly pull on cable towards center of washer. There should be a distance of 2-3/4 to 3" (7 to 7.5 cm) between cable and Spray Header Sliding Guide (Fig. 9-8b #1).
4. Tighten bolts on spray header cable attachment.
5. Pull on safety cable until desired tension is reached.

NOTE: Do not adjust safety cable. Tighten main cable.
Traveler Safety Cable Installation:

6. On sliding support (9, 10), service side, insert cable between retention plate (12) and mechanism. Leave approximately 1/2" (1 cm) of free cable. Tighten plate with bolts. (Figure 9-8c).
7. From inside unit, position traveler halfway. Insert security cable between guard (8) and right pulley (10) on service side (Fig. 9-8b).
8. Run cable across non-service side and insert between guard and left pulley on non-service side.
9. On non-service side, insert cable between retention plate and mechanism. Tighten retention plate slightly. Pull out cable from center until there is 1/2" (1 cm) slack on safety cable. Tighten bolts.

NOTE: Tension should be on traveler cable and not on traveler safety cable.

NOTE: If any adjustment is done to traveler cable, traveler security cable should also be adjusted.

8.28 HOW TO ADJUST SPRAY HEADER SPEED (FIGURE 9-8A)

1. Verify that air pressure is between 80-100 psi (5.36-6.71 bar)
2. On top of washer, locate micrometric valves (17) on left hand side of traveler cylinder (10).
3. Turning clockwise will close the valve and slow travelers down.
4. Turning counterclockwise will increase traveler speed.
5. A full stroke (up and down) should take approximately 6-7 seconds.

8.29 HOW TO REPLACE CYLINDER SUPPORTS # 117997-380, BEARINGS # 117909-926, BUSHINGS # 117997-326 AND PULLEYS # 117998-010 (FIGURE 9-8A)



CAUTION: Misadjusted pulley guards will result in immediate cable damage.

1. Lock electrical disconnect switch in OFF position and close unit supply valves.
2. Remove cable attachments and bolts.
3. Remove cable (Fig. 9-8 # 4) around pulley.
3. Remove pulley guard (34), pulley (35), bearing (36) and bushing (37).
4. Replace appropriate components and re-install in proper order.
5. Adjust pulley guard at 45° angle according to cable angle.
6. Refer to Section 8.25 "How to Adjust Traveler System Cable Tension".

8.30 HOW TO REPLACE SPRAY HEADER TRAVELER PNEUMATIC CYLINDER # 117909-707 (FIGURE 9-8A)

1. Lock electrical disconnect switch in OFF position and close unit supply valves.
2. Remove cable attachment plate (23) and remove cable from cylinder.

3. Remove micrometric valve (17), pneumatic fitting (18), and elbow (16) from cylinder (10).
4. Remove bolts (12), washers (13, 14) and nuts (15) from both cylinder supports.
5. Remove cylinder from supports.
6. On new cylinder, fully open adjustable end position cushioning (not shown).
7. Re-install cylinder on cylinder supports using nuts, washers and bolts previously removed.
8. Re-install micrometric valve, pneumatic fitting, and elbow previously removed.
9. Re-install traveler sensors (refer to section 8.68).
10. Refer to Section 8.25 "How to Adjust Traveler System Cable Tension".

NOTE: To adjust cylinder speed control, use Free-In controlled Flow-out technique (Refer to section: "Free-in controlled flow-out technique").

11. Verify proper operation of the new cylinder.

8.31 HOW TO REPLACE TRAVELER MECHANISM PULLEYS # 117997-325 OR PULLEY BUSHING # 117997-326 (FIGURE 9-8B)



CAUTION: Misadjusted pulley guards will result in immediate cable damage.

1. Lock electrical disconnect switch in OFF position and close unit supply valves.
- NOTE: Be careful not to loosen safety cable attachments.*
2. Untighten bolts (5) on side of pulleys (10).
 3. Remove bolts, pulley guards (8), pulleys (1), pulley bushings (9), washers (6) and self-locking nuts (7).
 4. Insert new pulley.
 5. Re-install pulley using previously removed, nuts, washers, spacers, pulley guards and bolts.
 6. Adjust pulley guards at 45° angle according to cable angle.
 7. Tighten all bolts.
 8. Verify proper operation of pulleys.

8.32 HOW TO REPLACE SPRAY HEADER FLEXIBLE HOSES # 117997-081 AND GASKETS (FIGURE 9-8C)

1. Lock electrical disconnect switch in OFF position and close unit supply valves.
2. On top inside wash chamber, remove quick disconnect clamp (not shown).
3. Remove gasket and replace viton gasket.
4. Remove bolt (15) holding spray header (2).
5. Slide hose and rotative coupling assembly (20) off the spray header connection.
6. Replace plastic bushings (18) and O-Rings (19).
7. Lubricate O-Ring before re-installing using sanitary white grease (P-117-903-609).
8. Re-install hose and rotative coupling assembly (20), O-Ring (19), spacers (18), washers, spring washers (16) and bolt previously removed.
9. Verify that hose can rotate smoothly.
10. In AUTOMATIC MODE, verify for proper operation of rotative coupling (excessive leaks will create pump pressure to drop below set point).
11. Make sure hose is against side of wash chamber. If not, loosen quick disconnect clamps (2) at top of wash chamber, twist hose toward wash chamber wall and tighten.

8.33 HOW TO ADJUST AND/OR REPLACE SPRAY HEADER SUPPORT # 117998-314, 117996-885 AND PULLEYS # 117998-317 (FIGURE 9-8C)

1. Lock electrical disconnect switch in OFF position and close unit supply valves.
2. Remove four bolts (6, 7, 8) holding spray header (1, 2) in place.

NOTE: To prevent header on opposite side of wash chamber from falling, raise header to the top of the wash chamber before removing cable plates.

3. Remove both cable plates (12) and free header supports (9, 10).
4. Loosen adjust wheel axis (21, 23, 24) holding adjustable pulleys.
5. Slide adjust wheel axis (21) upwards and remove spray header support.
6. Replace pulleys (22) if necessary.

7. Re-install spray header support using previously removed bolts.
8. Lower adjust wheel axis. Adjustment must be made to prevent spray header support from touching the 1 x 3" (2,5 x 7,5 cm) guide (Fig. 9-8b #1).
9. When adjustment is completed, move the support up and down and re-adjust if it is not well centered with guide.
10. Re-install cable brackets and spray header and refer to Sections 8.25 "How to Adjust Traveler System Cable Tension" and 8.27 "How to Replace/Adjust Spray Headers Safety Cable."
11. Verify for proper operation.

8.34 HOW TO REPLACE PNEUMATIC BALL VALVE # 117910-062 (FIGURE 9-9)

NOTE: Fully drain unit and piping. Run a complete DRAIN CYCLE.

1. Lock electrical disconnect switch in OFF position and close unit supply valves.
2. Remove pneumatic tubing and elbows from valve actuator (4).
3. Remove quick disconnect clamps (2) holding valve in place.
4. Install pneumatic elbows on new valve and re-install.

NOTE: Except for manifold connector valve, all valves should be closed when not actuated.

5. Enter SERVICE MODE to verify valve operation.

8.35 HOW TO REPLACE INTERIOR LIGHT FLUORESCENT TUBE # 117909-451 (FIGURE 9-10)

1. Lock unit electrical disconnect switch in OFF position.
2. On top of unit, remove wing nuts (8) on service side of cover (5). Open cover.
3. Remove clips from around light assembly (4) to remove transparent shield.
4. Remove defective fluorescent (3) tube and replace with new one.
5. Replace transparent shield, clip light assembly back in place, close cover and re-assemble wing nuts.

8.36 HOW TO REPLACE INTERIOR LIGHT ASSEMBLY # 117997-308 (FIGURE 9-10)

1. Lock unit electrical disconnect switch in OFF position.
2. On top of unit unplug cable connector (IL).
3. Remove wing nuts (8) on cover. Open cover fixture (5).
4. Remove clips from around light fixture to remove transparent shield.
5. Remove transparent shield.
6. Remove light assembly. Replace with new one.
7. Replace transparent shield, clip light assembly back in place, close cover and re-assemble wing nuts.
8. Plug in cable connector (IL).

8.37 HOW TO REPLACE EXHAUST VENT DAMPER PNEUMATIC CYLINDER # 117902-389 (FIGURE 9-11)

1. Lock unit electrical disconnect switch in OFF position.
2. Remove front service panels (Fig. 9-5 # 17) located above doors.
3. Exhaust vent damper pneumatic cylinder (11) is located on the main exhaust duct (1) on top of unit.
4. Remove nut (14) and clevis (9) holding cylinder in place.
5. Remove pneumatic connections, elbows (12) and clevis (9) from pneumatic cylinder (keep for re-installation).
6. Remove pneumatic cylinder.
7. Install old pneumatic connections.
8. Re-install new cylinder on main exhaust duct.
9. Re-install bolts.
10. Enter SERVICE MODE to verify for proper operation of pneumatic cylinder.
11. When output is de-energized, cylinder rod is fully forward and damper (4) is in close position.

8.38 HOW TO ADJUST EXHAUST # 117907-582 (FIGURE 9-11)

1. Remove front service panels (Fig. 9-5 #17) located above doors.

NOTE: To adjust damper or CFM, initiate a final rinse phase (to create a minimum vapor exhaust requirement situation and hottest temperature).

2. To adjust baffle (4), turn bolt (8) clockwise (located below cylinder clevis) to enable cylinder to close baffle and reduce air exhaust flow from wash chamber.
3. Open/close damper so that no vapor is exhausting from doors.
4. Close damper as much as possible to speed water heating process. Closing damper too much will create excessive vapor or leaks above doors.

8.39 HOW TO REPLACE EXHAUST FAN # 117909-920 (FIGURE 9-11)

1. Lock unit electrical disconnect switch in OFF position.
2. Remove clamps (21) and neoprene hose (20).
3. Remove 4 bolts holding exhaust fan motor (19) in place.
4. Remove clamp (23) and flexible drain hose (24).
5. Disconnect electrical connections.
6. Remove exhaust fan and re-install new one.
7. Enter SERVICE MODE to verify rotation of exhaust fan.

8.40 HOW TO REPLACE EXHAUST DUCT GASKET # 117003-890 (FIGURE 9-11)

1. Open doors.
2. Lock unit electrical disconnect switch in OFF position.
3. From inside washer: remove screws from ventilation duct (29).
4. Remove pulley guards (not shown) from both sides of ventilation duct.
5. Slide and pull out ventilation duct from door top baffle.
6. Remove ventilation duct gasket holder (31) and replace new gasket (30).
7. Reinstall gasket holder.

8. Reinstall ventilation duct and pulley gards.

8.41 HOW TO REPLACE TOP DOOR GASKET # 117003-597 (FIGURE 9-11)

1. Close doors.
2. Lock unit electrical disconnect switch in OFF position.
3. Remove front service panels (Figure 9-5 #17) located above doors.
4. Remove top gasket door support (26) and replace new gasket (25).

IMPORTANT: Make sure gasket touches top of doors but it doesn't force against them.

5. Enter SERVICE MODE to verify if door slides smoothly over gasket.
6. Reinstall front service panels.

8.42 HOW TO REPLACE DRYING DAMPER PNEUMATIC CYLINDER # 117902-389 (FIGURE 9-12)

1. Lock unit electrical disconnect switch in OFF position.
2. Drying Damper Pneumatic cylinder (11) is located to the right of the drying duct inlet (1).
3. Remove nut (14) and clevis pin assembly (10) holding cylinder (11) in place.
4. Remove pneumatic connections, elbows (12) and clevis (10) from cylinder (keep for re-installation).
5. Remove cylinder.
6. Re-install pneumatic connections, elbows and clevis on new cylinder.
7. Re-install new cylinder.
8. Enter SERVICE MODE to verify for proper operation.
9. When output is de-energized, verify cylinder rod is retracted and damper (3, 4, 5) is in closed position.

8.43 HOW TO ADJUST DAMPER SPEED (FIGURE 9-12)

1. Enter SERVICE MODE to access Test Outputs menu (see Section 4).
2. Use **dp** (damper), touch pad (Fig. 9-14a #3) to open/close damper.

NOTE: To adjust damper speed control, use Free-In controlled Flow-Out technique.

3. Untighten Allen screw on Flow Control Adjustment screw (24).
4. Adjust door speed using appropriate flow control (24) so that doors open/close within 1 to 2 seconds.
5. Tighten Allen screw on Flow Control Adjustment screw.

8.44 HOW TO ADJUST DRYING DUCT DAMPER # 117998-079 (FIGURE 9-12)

NOTE: Drying duct damper baffle cylinder is located to the right of the drying duct inlet.

1. To regulate air flow during drying phase, turn adjustment bolt (9) counterclockwise to reduce dry air flow into wash chamber. Adjust air flow not to have dry air escaping through doors during a drying phase.
2. When output is de-energized, verify cylinder rod is retracted and damper (3, 4, 5) is in closed position.

8.45 HOW TO REPLACE DRYING DAMPER GASKET # 117998-076 (FIGURE 9-12)

1. Lock unit electrical disconnect switch in OFF position.
2. Remove flexible conduit (3) located between heat exchanger (Fig. 9-31 #1) and main drying duct (1).
3. Remove 2 screws (6) holding the gasket (5) in place inside drying duct.
4. Remove damper plates (4) and gasket (5).
5. Insert new gasket and re-install damper plates and bolts.

8.46 HOW TO REPLACE EMERGENCY STOP BUTTON (ESB)(FIGURE 9-13)

1. Lock unit electrical disconnect switch in OFF position.
2. Open door control panel.
3. Unplug cable connectors (ESB A on left side or ESB B on right side of the unit).
4. Remove protection box cover (10) on back of EMERGENCY STOP Button.

5. Disconnect white and black wires from EMERGENCY STOP button assembly.
6. Insert a small screw driver or a pen into square hole on top of EMERGENCY STOP button to raise and release assembly.
7. Remove red EMERGENCY STOP button (7).
8. Install new EMERGENCY STOP button.
9. Re-connect white and black wires.
10. Re-install protection box cover and re-plug cable connectors (ESB x).

8.47 RECOMMENDED ELECTROSTATIC DISCHARGE (ESD) PRECAUTIONS

⚠ WARNING - ELECTRIC SHOCK AND BURN HAZARD: Disconnect all utilities to washer before servicing. Do not service the washer unless all utilities have been properly locked out. Always follow OSHA Lockout-Tagout and electrical safety-related work practice standards. (See 29 CFR 1910.147 and .331 through .335.)

NOTE: The following precautions should be taken whenever Printed Circuit (PC) Boards are being handled or replaced.

- Always use an ESD-safe container when transporting boards from one location to another.
- No boards should be removed from their containers except at an approved static station or where personnel and machine are properly grounded.
- At minimum, use a wrist strap grounded to the washer when removing and/or replacing PC Boards.

NOTE: Failure to follow the above precautions may result in electrostatic damage to the Printed Circuit Board. If a static discharge happens to go through an Integrated Circuit (IC) and the transient current pulse is not effectively diverted by protective circuitry, the current from the discharge can flow through the board and raise the temperature of internal junctions to their melting point. Damage can range from latent degradation to complete destruction.

8.48 HOW TO LOWER CONTROL PANEL ASSEMBLY WITH PRINTER # 117955-388 (FIGURE 9-14)

NOTE: Control Panel with Printer pivots forward and down to horizontal position for service.

1. Lock unit electrical disconnect switch in OFF position.
2. Open control door.
3. Using one hand to support control assembly, remove two hex screws (upper right and upper left) holding control in place.
4. Carefully lower control assembly forward and downward until it stops in a horizontal position.

NOTE: Stops are provided to support control assembly in position.

8.49 HOW TO REPLACE PRINTER PC BOARD (FIGURE 9-14A-B)

⚠ CAUTION: Observe the Electrostatic Precautions outlined in 8.47. Always wear a grounding wrist strap when removing or replacing PC boards or ICs.

1. Lock unit electrical disconnect switch in OFF position.
2. Lower control panel assembly (see Sections 8.47 and 8.48).
3. Unplug cables from connectors J41 and J43 on the Printer Board (Fig. 9-14b #3).
4. Remove Printer PC Board from the three stand-offs (Fig. 9-14 b # 3).
5. Remove and retain three screws and nuts holding printer to PC Board. Unplug the printer ribbon cable from PC Board (Fig. 9-14 #4).
6. Set DIP switches on new printer PC Board (table 8-1).
7. Mount printer to new Printer PC Board.
8. Re-connect printer ribbon cable.
9. Re-install printer PC Board on standoffs and reconnect cables.
10. Raise and secure control assembly back into position.

8.50 HOW TO REPLACE PRINTER (FIGURES 9-14 A-B)

⚠ CAUTION: Observe the Electrostatic Precautions outlined in 8.47. Always wear a grounding wrist strap when removing or replacing PC boards or ICs.

NOTE: The lifetime of the printer is approximately 500,000 lines of print. If a row of dots is missing or faint,


check the printhead, it may merely be dirty. To clean, cut a piece of bond type paper (e.g., typing or copy paper) the width of thermal paper and push it through printer several times. The coarseness of the bond paper may restore the printer to normal.

1. Follow Printer PC Board Replacement (see Sections 8.48 and 8.49), and replace printer (Fig. 9-14 a) with a new one.

8.51 HOW TO LUBRICATE PRINTER (FIGURE 9-14 A-B)


1. If printer tends to drag, wipe printer head guide shaft clean and apply lubricant (P-764321-985).

8.52 DISPLAY MODULE SELF TEST (FIGURE 9-14 A-B)

 **CAUTION:** Observe the Electrostatic Precautions outlined in 8.47. Always wear a grounding wrist strap when removing or replacing PC boards or ICs.

1. Lock unit electrical disconnect switch in OFF position.
2. Lower control panel assembly (see Section 8.48 and 8.49).
3. Locate SW1 on interface board and set Dip Switch #6 to ON position (Fig. 9-14 b #7) (see Table 8-2).
4. Put electrical disconnect switch to ON position. Display will start a self-test.
5. Lock unit electrical disconnect switch in OFF position and set Dip Switch #6 back in OFF position.
6. Raise and secure control assembly back into position.


8.53 HOW TO REPLACE DISPLAY MODULE (FIGURES 9-14A-B)

 **CAUTION:** Observe the Electrostatic Precautions outlined in 8.47. Always wear a grounding wrist strap when removing or replacing PC boards or ICs.

1. Lock unit electrical disconnect switch in OFF position.
2. Lower control panel assembly (see Sections 8.48 and 8-49).
3. Unplug cables from connectors J1 and J2 on display module.


4. Remove display module from the four standoffs (Fig. 9-14 b # 6).
5. Mount new display on standoffs and reconnect cables.
6. Raise and secure control assembly back into position.

8.54 HOW TO REPLACE INTERFACE PC BOARD # 146655-598 (FIGURE 9-14 A-B)

 **CAUTION:** Observe the Electrostatic Precautions outlined in 8.47. Always wear a grounding wrist strap when removing or replacing PC boards or ICs.

1. Lock unit electrical disconnect switch in OFF position.
2. Lower control panel assembly (see Sections 8.48 and 8.49).
3. Unplug J60, J61, J62, J64, J67, J68, J69 cables from connector on Interface Board (Fig. 9-14 b #7).
4. Remove Interface PC Board from the four standoffs.
5. Set Dip Switch SW1 properly on new Interface PC Board (see Table 8-2).
6. Mount new Interface PC Board on standoffs and reconnect cables.
7. Raise and secure control assembly back into position.

8.55 HOW TO REPLACE TOUCH PAD # 117901-719 (FIGURES 9-14A TO C)

 **CAUTION:** Observe the Electrostatic Precautions outlined in 8.47. Always wear a grounding wrist strap when removing or replacing PC boards or ICs.

1. Lock unit electrical disconnect switch in OFF position.
2. Lower control panel assembly (see Sections 8.47 and 8.48).
3. Unplug J61, J62 cables from connector and ground strip on Interface PC Board (Fig. 9-14 b # 7).
4. Peel off old Touch Pad and clean off old adhesive (Fig. 9-14a #3). (Use a dry hot air blower to heat around touch pad, to make it come off easier.)

5. Install new Touch Pad and reconnect cables.
6. Raise and secure control assembly back into position.

⚠ CAUTION: Observe the Electrostatic Precautions outlined in 8.47. Always wear a grounding wrist strap when removing or replacing PC boards or ICs.

8.56 NON-OPERATING END CONTROL PANEL (DOUBLE DOOR UNITS) (WITHOUT PRINTER) (FIGURES 9-14 A-B)

The Non-Operating End Control Panel features the same touch pad and display as the Operating End Control Panel. The display window concurrently shows the same messages as shown on the display window of the Operating End Control Panel (see DIP switch settings Table 8-3).

8.57 HOW TO REPLACE CONTROL PC BOARD (FIGURE 9-20 B AND C)

⚠ CAUTION: Observe the Electrostatic Precautions outlined in 8.47. Always wear a grounding wrist strap when removing or replacing PC boards or ICs.

1. Lock unit electrical disconnect switch in OFF position.
 - Follow recommended electrostatic discharge precautions (see Section 8.47).
2. Open Main Electrical Box cover located on service side.
3. Locate Control Board card (in slot 1) and remove board (Fig. 9-20 # 43).

NOTE: Control Boards are unprogrammed as shipped from STERIS. When replacing Control PC Board, ensure that original program chips are transferred from the existing board; otherwise a new program must be downloaded into new chips by an authorized STERIS representative.

4. Locate and remove chips U13, U16, U15 and U12 on both boards using tool 764326-559 and interchange them (Fig. 9-20 b #2).

NOTE: Each chip bears a part number, a revision number and a chip designation (i.e., U13, U16, U15 or U12). Each chip must be re-installed in respective sockets.

NOTE: Each chip bears a dot along one edge. Dot must be aligned with visible arrow along the edge of the chip socket.

5. Dip switches SW1; SW2, SW3 and SW4 for the new Control Board must be set properly (see Table 8-4).
6. Install new Control PC Board card in slot 1 position (Fig. 9-20 # 43).

8.58 HOW TO REPLACE CONTROL BOARD FLASH MEMORY CHIPS (FIGURE 9-20 B)

⚠ CAUTION: Observe the Electrostatic Precautions outlined in 8.47. Always wear a grounding wrist strap when removing or replacing PC boards or ICs.

NOTE: Unit Configuration must be deleted after replacing Flash Memory Chips. All Factory Mode, Service Mode and Custom Cycle values will be lost. Print all information before replacing Flash Memory Chips (refer to Section 4). RTDs Pressure Transmitters, Chemical Injection Rates must be recalibrated.

1. Lock unit electrical disconnect switch in OFF position.
2. Open Main Electrical Box cover located on service side.
3. Locate and remove Control Board (in slot 1) (Fig. 9-20 # 43).
4. Locate and remove chips U13, U16, U15 and U12 from board using tool 764326-559 (Fig. 9-20b # 2).
5. Insert new Chips.

NOTE: Each chip bears a part number, a revision number and a chip designation (i.e., U13, U16, U15 or U12). Chips must be installed in respective sockets.

NOTE: Each chip bears a dot along one edge. Dot must be aligned with visible arrow along the edge of the chip socket.

6. Install Control Board card in slot 1 position (Fig. 9-20 # 43).
7. Put electrical disconnect switch to ON position and enter FACTORY SET-UP MODE (see Section 4).
8. Delete Configuration and re-enter values as printed previously.
9. Set SERVICE MODE Values as printed previously (see Section 4).

10. Set custom cycles (if any) as printed previously (see operator manual).
11. Calibrate RTD's, Pressure transmitter, Chemical Injection rates (see Section 4).

8.59 HOW TO REPLACE BATTERY BACKUP (FIGURE 9-20B)

CAUTION: Observe the Electrostatic Precautions outlined in 8.47. Always wear a grounding wrist strap when removing or replacing PC boards or ICs.

NOTE: Unit Configuration must be deleted after replacing Flash Memory Chips. All Factory Mode, Service Mode and Custom Cycle values will be lost. Print all information before replacing Flash Memory Chips (refer to Section 4). RTDs pressure transmitters, chemical injection rates and flowmeters must be recalibrated.

1. Lock unit electrical disconnect switch in OFF position.
2. Open Main Electrical Box cover located on service side.
3. Locate and remove Control Board (in slot 1) (Fig. 9-20 # 43).
4. Locate and remove battery using a small screwdriver (Fig. 9-20 b # 3).
5. Insert new Battery.
6. Install Control Board card in slot 1 position (Fig. 9-20 # 43).
7. Put electrical disconnect switch to ON position and enter FACTORY SET-UP MODE (see Section 4).
8. Delete Configuration and re-enter values as printed previously.
9. Set SERVICE MODE Values as printed previously (see Section 4).
10. Set Customers custom cycles (if any) as printed previously (refer to Operator Manual).
11. Recalibrate RTDs, pressure transmitter, chemicals injection rates (see Section 4).

8.60 HOW TO REPLACE I/O BOARD (FIGURE 9-20C)

NOTE: Each I/O Board has a specific location (slot). If an I/O Board must be placed in another location, re-set Dip Switches SW1, SW2 and SW3 (see Table 8-5, 8-6, and 8-7).

CAUTION: Observe the Electrostatic Precautions outlined in 8.47. Always wear a grounding wrist strap when removing or replacing PC boards or ICs.

1. Lock unit electrical disconnect switch in OFF position.
2. Open Main Electrical Box cover located on service side.
3. Locate and remove appropriate I/O Boards (slot 5, 6 and 7) (Fig. 9-20 # 44).
4. Set Dip Switches SW1, SW2 and SW3 on new I/O Board (see Table 8-5, 8-6 and 8-7) depending on board location (Slot 5, 6 or 7) (Fig. 9-20 c # 3).
5. Install new I/O Board.

8.61 HOW TO REPLACE I/O BOARD SOLID STATE RELAYS (FIGURE 9-20C)

CAUTION: Observe the Electrostatic Precautions outlined in 8.47. Always wear a grounding wrist strap when removing or replacing PC boards or ICs.

1. Lock unit electrical disconnect switch in OFF position.
2. Open Main Electrical Box cover located on service side.
3. Locate and remove I/O Boards (slot 5, 6 and 7) (Fig. 9-20 # 44).
4. Locate appropriate relay and remove, using small screwdriver (Fig. 9-20 c # 3).
5. Install new relay.
6. Reinstall I/O Board in initial location (Fig. 9-20 # 44).


8.62 HOW TO REPLACE I/O BOARD FUSES (FIGURE 9-20C)


CAUTION: Observe the Electrostatic Precautions outlined in 8.47. Always wear a grounding wrist strap when removing or replacing PC boards or ICs.

1. Lock unit electrical disconnect switch in OFF position.
2. Open Main Electrical Box cover located on service side.

3. Locate and remove I/O Boards (slot 5, 6 and 7) (Fig. 9-20 # 44).
4. Locate appropriate fuses and remove (Fig. 9-20 c # 2).
5. Install new fuses.
6. Reinstall I/O Board (Fig. 9-20 # 44).
9. Deactivate Close Doors Pilot Valve (CL if left doors or CR if right doors). Doors will slightly open due to gaskets. Make sure the switch's red LED is still turned on. Slide switch if necessary.
10. Tighten Switch's Allen screws at this position.
11. Activate and deactivate Close Doors Pilot Valve a few times and verify that switch's red LED is always turned on when doors are closed with pressure and without pressure.
12. Install service panel above doors.

8.63 HOW TO REPLACE AND/OR ADJUST AUTOMATIC DOOR SENSOR (FIGURES 9-6A AND 9-15)

 **WARNING - PERSONAL INJURY AND/OR EQUIPMENT DAMAGE - Do not enter Automatic Mode to adjust door safety switches. If unit is in Automatic Mode and Load Sensor has been enabled in Service Mode, doors could open automatically if sensor detects an object while adjusting the safety switch.**


 **WARNING! PERSONAL INJURY HAZARD: Always carefully adjust Emergency Stop Guard Rail switches. If switches are not properly adjusted, doors could remain closed even if Emergency Stop Guard Rails are pressed. In case of emergency, a person could be trapped inside wash chamber.**

1. Lock unit electrical disconnect switch in OFF position.
2. Remove service panel (Figure 9-5) above doors of defective sensor.
3. Locate and unplug switch cable connector (LS3/4 on left side or LS8/4 on right side of the unit).
4. Loosen the two switches' Allen screw to remove switch from cylinder and replace with the new one. Do not tighten Allen screw yet.
5. Plug cable connector and attach cable as originally. Make sure that cable does not interfere with doors and cylinder movement.
6. Put unit electrical disconnect switch to ON position and enter SERVICE MODE (see Section 4).

NOTE: DO NOT ENTER AUTOMATIC MODE.


7. Activate Close Doors Pilot Valve (CL if left doors or CR if right doors). See Section 4.
8. Slide switch on the cylinder until the switch's red LED is turned on.


8.64 HOW TO REPLACE AND/OR ADJUST EMERGENCY GUARD RAIL MICROSWITCHES (ESGSS) # 117997-306 (FIGURES 9-7, 9-15)

 **WARNING - PERSONAL INJURY AND/OR EQUIPMENT DAMAGE - Do not enter Automatic Mode to adjust door safety switches. If unit is in Automatic Mode and Load Sensor has been enabled in Service Mode, doors could open automatically if sensor detects an object while adjusting the safety switch.**

1. Lock unit electrical disconnect switch in OFF position.
2. Remove service panel (Fig. 9-5 # 17) above left side door.
3. Locate and unplug cable connector (Fig. 9-15 # 1) on defective switch (ESGSS on service side or ESGNSS on non-service side)
4. Remove defective switch and replace with new one.
5. Switch lever must pass through the actuator (Fig. 9-7 # 17) on top of the guard rail rod exiting top of wash chamber.
6. Adjust the lever so it is raised and activated when corresponding Emergency Guard Rail (Fig. 9-7 # 21) inside wash chamber is raised (you will hear a "click").
7. Make sure switch is not activated when corresponding Emergency Guard Rail inside chamber is lowered.
8. Plug cable connector (ESGSS or ESGNSS).
9. Re-install service panel above doors.
10. Verify for proper operation after power is restored.


8.65 DOOR SAFETY SWITCHES # 117998-340 (FIGURES 9-6A AND 9-15)

 **WARNING - PERSONAL INJURY AND/OR EQUIPMENT DAMAGE** - Do not enter Automatic Mode to adjust door safety switches. If unit is in Automatic Mode and Load Sensor has been enabled in Service Mode, doors could open automatically if sensor detects an object while adjusting the safety switch.

 **WARNING - PERSONAL INJURY AND/OR EQUIPMENT DAMAGE** - Misadjustment of safety switches can cause personal injury or equipment damage if a failure occurs on Door Close Proximity Switches. Always adjust safety switches carefully.

1. Lock unit electrical disconnect switch in OFF position.
2. Remove service panel (Fig. 9-5 # 17) above door.
3. Locate and unplug switch cable connector (Fig. 9-15 # 2) (LDPSS on left side or RDPSS on right side of the unit).
4. Remove switch from bracket and replace with new one.
5. Plug switch cable connector.
6. Put unit electrical disconnect switch in ON position and enter SERVICE MODE (see Section 4) to activate outputs manually. Do not enter AUTOMATIC MODE.
7. Adjust switch lever so it is raised and activated when doors are fully closed (you will hear a "click").
8. Close and open doors in SERVICE MODE to verify adjustment.
9. Make sure switch is not activated when doors are slightly open.
10. Verify for proper operation
11. Re-install service panel above door.

8.66 HOW TO REPLACE PHOTOELECTRIC SENSOR # 117997-307 (FIGURES 9-5, 9-6A AND 9-15)

 **WARNING - PERSONAL INJURY AND/OR EQUIPMENT DAMAGE** - Do not enter Automatic


Mode to adjust door safety switches. If unit is in Automatic Mode and Load Sensor has been enabled in Service Mode, doors could open automatically if sensor detects an object while adjusting the safety switch.

1. Lock unit electrical disconnect switch in OFF position.
2. Remove service panel (Fig. 9-5 # 17) above doors of defective sensor.
3. Locate and unplug sensor cable connector (Fig. 9-15 # 3) (LS2/4 on left side or LS15/4 on right side of the unit).
4. Remove sensor from sensor support and replace with new one (Fig. 9-5 # 29).
5. Plug cable connector and attach cable as originally. Make sure that cable does not interfere with doors and cylinder movement.
6. Put unit electrical disconnect switch in ON position and enter SERVICE MODE (see Section 4).

NOTE: DO NOT ENTER IN AUTOMATIC MODE.

7. Go in the INPUT TEST menu, (see Section 4), and verify that LS (if left doors sensor) or RS (if right doors sensor) is in capital letter when an object is present at 9 ± 3 inches from the floor and 6 inches from doors.
8. Adjust sensor's support angle (Fig. 9-6a # 52, 53) and sensor detectable distance if necessary. Detectable distance sensor rotary switch NEAR/FAR is located on sensor itself.
9. Make sure that the sensor does not detect an object beyond 6 inches from the doors and below 9 ± 3 inches from the floor.
10. Install service panel above doors.

8.67 HOW TO REPLACE AND/OR ADJUST AUTOMATIC DOOR SENSOR # 117998-338 (FIGURES 9-6A AND 9-15)

 **WARNING - PERSONAL INJURY AND/OR EQUIPMENT DAMAGE** - Do not enter Automatic Mode to adjust door safety switches. If unit is in Automatic Mode and Load Sensor has been enabled in Service Mode, doors could open automatically if sensor detects an object while adjusting the safety switch.

1. Lock unit electrical disconnect switch in OFF position.

2. Remove service panel (Fig. 9-5 #17) above doors of defective sensor.
3. Locate and unplug switch cable connector (Fig. 9-5 #4) (LS3/4 on left side or LS8/4 on right side of the unit).
4. Loosen the two switch's Allen screw to remove switch from cylinder and replace with the new one. Do not tighten Allen screw yet.
5. Plug cable connector and attach cable as originally. Make sure that cable does not interfere with doors and cylinder movement.
6. Put unit electrical disconnect switch in ON position and enter in SERVICE MODE (see Section 4).

NOTE: DO NOT ENTER IN AUTOMATIC MODE.

7. Activate Close Doors Pilot Valve (CL if left doors or CR if right doors). See Section 4.
8. Slide switch on the cylinder until red LED turns on.
9. Deactivate Close Doors Pilot Valve (CL if left doors or CR if right doors). Doors will slightly open due to gaskets. Make sure red LED is still turned on. Slide switch if necessary.
10. Tighten Allen screws into position.
11. Activate and deactivate Close Doors Pilot Valve a few times and verify that red LED is always turned on when doors are closed with pressure and without pressure.
12. Install service panel above doors.

8.68 HOW TO REPLACE TRAVELER CYLINDER LEFT AND RIGHT POSITION PROXIMITY SWITCHES # 117998-339 (FIGURES 9-8A AND 9-15)

NOTE: There are two traveler proximity switches. One located on left side (LS0/2) and one on right side (LS1/2) of the traveler cylinder.

NOTE: Left position proximity switch (LS0/2) must be removed before and re-adjusted after replacing Right position proximity switch (LS1/2). Since both proximity switches need to be entered from left hand side of cylinder.

1. Lock unit electrical disconnect switch in OFF position.
2. Locate Left Position Proximity Switch (6) (LS0/2) and unplug defective switch cable connector.
3. To remove switch, loosen switch Allen screw

and slide switch completely to the left.

4. Insert new switch into traveler cylinder groove (switch LED facing left). Do not tighten Allen screw yet.
5. Plug switch cable connector and attach cable as originally.
6. Put unit electrical disconnect switch to ON position.
7. Enter SERVICE MODE to activate outputs manually. (See Section 4).
8. Activate Traveler Cylinder Leftward Pilot Valve (TL).
9. Slide switch to the left. When LED turns on, stop immediately and mark position.
10. Push LED to the left. When LED turns off, mark position.
11. Center LED between two marks.
12. Tighten screw into position.
13. Repeat steps 8 to 12 for Right Position Proximity Switch (LS01/2).
14. Activate Traveler Cylinder Rightward Pilot Valve (TR).

8.69 RTD's # 117955-383, 117910-806 (FIGURES 9-11, 9-17, 9-18 AND 9-24)

NOTE: There are three RTDs. Water Temperature RTD (BI RTD) is located at the outlet of the In-line heat exchanger (Fig. 9-17 # 6 or 27). Vented Drying System Option RTD (D RTD) is located on top of the wash chamber on the exhaust duct (Fig. 9-11 # 35). Cool Down Side Tank Option RTD (CDT RTD) is located on the left side of the cool down tank on service side (Fig. 9-24 #22), for units without cool down tank, on service side (Fig. 9-18 #30).

NOTE: Drain piping before replacing In-line Heat exchanger RTD (BI RTD)

1. Lock unit electrical disconnect switch in OFF position.
2. Locate and unplug defective RTD cable connector.

NOTE: For In-line Heat exchanger RTD, Main Electrical Box is supported on hinges and it can be pulled out to gain access behind it. Remove bolt at the bottom of the box and pull out.

3. Loosen RTD compression fitting and remove RTD and compression fitting.
4. Put Teflon tape on a new compression fitting thread and install it.

5. Insert completely new RTD inside compression fitting and tighten.
6. Plug RTD cable connectors and attach extra cable to avoid contact with hot surfaces if necessary.
7. Put unit electrical disconnect switch to ON position.
8. Enter SERVICE MODE (see Section 4).
9. Recalibrate RTD (see Section 4).

8.70 HOW TO REPLACE MAIN WATER INLET FLOWMETER # 117995-718 (FIGURE 9-26)

1. Lock unit electrical disconnect switch in OFF position.
2. Remove bolt at the bottom of the Main Electrical Box on Service Side.
3. Swing out electrical box (supported on hinges) to gain access to Main Water Inlet flowmeter.
4. Locate flowmeter (10) (LS0/3) and unplug cable connector.
5. Drain hot water inlet piping by removing drain plug (9) located at the lowest point on piping.
6. Loosen two unions (6) above and below flowmeter to remove hot water inlet piping section.
7. Remove flowmeter and install new one. Place Teflon tape on piping threads.
8. Re-install hot water inlet piping and drain plug.
9. Plug cable connector into flowmeter.
10. Put unit electrical disconnect switch to ON position.
11. Enter SERVICE MODE (see Section 4).
12. Activate one Hot Tap Water Inlet Valve on (F1, F2 or F3) for a short period of time to fill hot water inlet piping.
13. Recalibrate main water inlet flowmeter (see Section 4).

8.71 HOW TO REPLACE PRESSURE TRANSMITTER # 117909-640 (FIGURE 9-17)

NOTE: Drain piping before replacing Pressure Transmitter (PT)

1. Lock unit electrical disconnect switch in OFF position.

2. Remove bolt at the bottom of Main electrical Box on Service Side and pull it to have access to Pressure transmitter (Main electrical box is supported on hinges).
3. Locate Pressure Transmitter PT (9), unplug DIN connector and remove transmitter.
4. Put Teflon tape on new Pressure Transmitter threads, install it and plug DIN connector.
5. Put unit electrical disconnect switch to ON position.
6. Enter in SERVICE MODE (see Section 4).
7. Recalibrate Pressure Transmitter (see Section 4).

8.72 HOW TO REPLACE PRESSURE PUMP (10HP) SEAL # 117-910-061, GASKET COVER SEAL #117-996-833 OR PUMP SHAFT # 117-996-802 (FIGURE 9-17A)

1. Lock unit electrical disconnect switch in OFF position.
2. Remove casing pump bolts (13).
3. Remove casing pump (11).
4. Remove impeller lockdown (10).
5. Remove gasket lockdown (4) and sleeve.
6. Remove impeller (9) (pull).
7. Remove and replace seal kit (6).
8. Remove and replace casing gasket (8) (if necessary).
9. Remove and replace pump shaft (14) (if necessary).
10. Re-install the parts in reverse order.
11. Test for leaks.

8.73 HOW TO REPLACE SELF-CLEANING FILTER CARTRIDGE # 117989-189 (FIGURE 9-18).

1. Untighten quick-disconnect clamps (7) on valve (16). Move Tank 1 recirculation ball valve to the right (see Figure 9-18).
2. Untighten quick-disconnect clamps on Self-cleaning filter and piping. Push piping (14) to the left.
3. Lift out self cleaning filter (24).
4. Replace new cartridge.
5. Move filter piping back into position. Tighten quick-diconnect clamps.

8.74 HOW TO REPLACE SUCTION PUMP SEAL # 117997-535, GASKET COVER SEAL # 117997-340 OR PUMP SHAFT # 117996-802 (FIGURE 9-18A)

1. Lock unit electrical disconnect switch in OFF position.
2. Remove casing pump bolt (13).
3. Remove casing pump (11).
4. Hold shaft (3) and unscrew impeller (8) (when facing shaft counter clockwise).
5. Remove and replace seal kit (7).
6. Remove and replace casing gasket (5) (if necessary).
7. Remove and replace pump shaft (3) (if necessary), do not tighten pump shaft on motor shaft.
8. Re-install parts in reverse order.

8.74.1 HOW TO ADJUST IMPELLER # 117910-217 (ONCE ALL PARTS ARE RE-INSTALLED) (FIGURE 9-18A)

1. Lock unit electrical disconnect switch in OFF position.
2. Push pump shaft (3) against pump diffuser (9).
3. Withdraw 1/64" and tighten pump shaft set screws.
4. Test for leaks.

8.74.2 HOW TO REPLACE IMPELLER DIFFUSER # 117910-218 (FIGURE 9-18A)

1. Lock unit electrical disconnect switch in OFF position.
2. Remove 4 bolts (not shown) 5/16-18 x 3/4".
3. Remove impeller diffuser (9).
4. Remove and replace gasket (10).
5. Re-install impeller diffuser with bolts.

8.75 HOW TO REPLACE PH NEUTRALIZING SYSTEM MIXING PUMP (1/3HP) SEAL # 117996-813, GASKET COVER SEAL # 117910-397 OR PUMP SHAFT 117996-859 (FIGURE 9-19 A)

1. Lock unit electrical disconnect switch in OFF position.
2. Remove casing volute bolts (11).
3. Remove casing volute (12).
4. Remove impeller lock down (14).
5. Remove impeller (10) (pull).
6. Remove and replace seal kit (7).
7. Remove and replace casing gasket (9) (if necessary).
8. Remove and replace pump shaft (2) (if necessary).
9. Re-install parts in reverse order.
10. Test for leaks.

8.76 HOW TO REPLACE PH CONTROLLER (PH NEUTRALIZING SYSTEM OPTION) (FIGURE 9-3)

NOTE: pH Controller must be initialized and calibrated after replacement. 3 oz (80 ml) of a pH 4 buffer solution, 3 oz (80 ml) of a pH 10 buffer solution, 3 oz (80 ml) of tap water and three 6 oz (150 ml) beakers are needed to perform calibration (approx. qty) (see Sections 8.76 and 8.77).

1. Lock unit electrical disconnect switch in OFF position.
2. Open Main Electrical Box (5) cover and locate pH controller (17) at the bottom of the cover.
3. Disconnect all wires on terminals TB1, TB2 and TB3 on controller.
4. Remove screws on each corner of controller and remove controller.
5. Install new controller and reconnect all wires on terminals TB1, TB2 and TB3 at their same location. Refer to Electrical Schematic #122-999-790 if necessary.

8.77 HOW TO REPLACE PH PROBE (PH NEUTRALIZING SYSTEM OPTION) (FIGURE 9-19)

NOTE: pH Controller must be calibrated after probe replacement. 3 oz (80 ml) of a pH 4 buffer solution, 3 oz (80 ml) of a pH 10 buffer solution, 3 oz (80 ml) of tap water and three 6 oz (150 ml) beakers are needed to perform calibration (see Section 8.79).

1. Lock unit electrical disconnect switch in OFF position.

2. Locate and drain neutralizing pump piping (Fig. 9-19).
3. Locate pH probe (6), unplug connector and remove.
4. Remove cap on new pH probe, install and plug connector.
5. Perform a calibration (see Section 8.79).

8.78 HOW TO ADJUST PH CONTROLLER (PH NEUTRALIZING SYSTEM OPTION) (FIGURE 9-3)

1. Enter SERVICE MODE (see Section 4). Entering in SERVICE MODE will prevent unit control from generating alarms or activating undesired outputs while pH controller initialization is performed.

NOTE: The following steps are to adjust pH controller communication setting and apply to the pH controller touch pad and display screen.

2. Press MENU once, then press CURSOR (left or right) until display shows SYSTEM RESET, then press OK/NEXT twice.
3. Press MENU once, then press CURSOR (left or right) until display shows SET FREQUENCY, then press OK/NEXT once.
4. Press VALUES (up or down) to select controller frequency operation (50Hz or 60Hz). See frequency value printed on nameplate located under Main Electrical Box. Press OK/NEXT twice.
5. Press MENU, then press CURSOR (left or right) until display shows SET SERIAL PORT, then press OK/NEXT once.
6. Press VALUES (up or down) until display shows BAUD = 19.2.
7. Press CURSOR (left or right) once, then press VALUES (up or down) until display shows P = EVEN. Press OK/NEXT twice.

8.79 HOW TO CALIBRATE PH CONTROLLER (FIGURES 9-3 AND 9-19)

⚠ WARNING - CHEMICAL BURN HAZARD: Chemicals are caustic and can cause adverse effects to exposed tissues. Do not get in eyes, on skin or attempt to ingest by mouth.

- Read and follow the precautions and instructions on the chemical label and in the Material

Safety Data Sheet (MSDS) prior to handling the chemical, refilling chemical containers or servicing chemical injection pumps and lines.

- Wear appropriate personal protective equipment (PPE) whenever handling chemicals or servicing chemical injection pumps and lines.



CAUTION: pH probe glass bulbs are fragile. Do not rub or scratch. Always immerse probe in water to prevent bulb from drying.

1. Fill first beaker with pH 4 buffer solution, fill second beaker with pH 10 buffer solution and fill third beaker with tempered tap water.
2. Locate and drain neutralizing pump piping (Fig. 9-19).
3. Enter SERVICE MODE (see Section 4).

NOTE: Entering in SERVICE MODE will prevent control from generating alarms or activating undesired outputs while pH controller calibration is being performed.

4. Locate pH probe under Main Electrical Box and remove probe (Fig. 9-19 #6) from neutralizing pump piping (without unplugging cable connector).

NOTE: The following apply to the pH controller touch pad and display screen.

5. Place probe in pH 4 buffer solution beaker.
6. Press CALIBRATE and use VALUE (up or down) to select CALIBRATE SENSOR then press OK/NEXT once.
7. Use VALUE (up or down) to select CAL SENSOR CH A then press OK/NEXT once.
8. Use VALUE (up or down) to select CAL CH A #1: pH, then press OK/NEXT once.
9. Use VALUE (up or down) to enter value A pH = 4.0000, then press OK/NEXT once.
10. Display shows A = X.XXX pH OK?. Let reading stabilize, then press OK/NEXT twice.
11. Put probe in tap water beaker and swirl to rinse probe, then put probe in pH 10 buffer solution beaker.
12. Use VALUE (up or down) to select Do POINT #2? Yes then press OK/NEXT once.
13. Use VALUE (up or down) arrows to enter value "A pH = 10.000" then press OK/NEXT once.
14. Display shows "A = X.XXX pH OK?". Let reading stabilize then press OK/NEXT three times.
15. Verify that pH controller displays a pH 10 value.

16. Place probe in tap water beaker and swirl to rinse probe, then put probe in pH 4 buffer solution beaker.
17. Verify that pH controller displays a pH 4 value.
18. Put probe in tap water beaker and swirl to rinse probe then install probe on the neutralizing pump piping. Attach extra cable to avoid contact with hot surfaces if necessary.

NOTE: PROBE MUST NOT STAY OUTSIDE WATER FOR A LONG PERIOD OF TIME. If neutralizing pump piping is completely empty, put unit electrical disconnect switch in OFF position then to ON position. The washer control will automatically immerse pH probe upon power up sequence.

8.80 HOW TO CALIBRATE CHEMICAL INJECTION RATE

1. To calibrate Chemical Injection, press **STOP/RESET** until main Service Mode menu appears. Display shows:

TESTS*	CONSUMP.
SET-UP	CALIBRATE

** Indicates flashing position*

2. Press **SELECT CYCLE** until **CALIBRATE** is flashing. Display shows:

TESTS	CONSUMP
SET-UP	CALIBRATE*

** Indicates flashing position*

3. Press **CYCLE/START** to confirm selection and access Calibration menu. Display Shows:

RTDs*	PRESSURE
CHEMICAL	WATER

** Indicates flashing position*

4. To perform Chemical Calibration, press **SELECT CYCLE** until **CHEMICAL** is flashing. Press **CYCLE START** to confirm selection. Display shows:

ALKALINE*	ACID
NEUTRAL	

** Indicates flashing position*

5. Loosen fitting from chemical injection port (IP1) on **ALKALINE** tank (Pump1). Pull out blue tubing and place tubing in a 34 oz. (or more) (1 l) graduated cylinder (see Figure 8-2).
6. Press **CYCLE/START** to confirm selection. Display shows:

**PRESS START TP
TO ENERGIZE PUMP**

7. Press **CYCLE/START** again to initiate injection. Display shows:

**INJECTION IN
PROGRESS**

8. When injection is completed, display shows:

**CHEM. AMOUNT = XXX.X
PRESS CVTP TO SET**

9. Measure collected amount of chemical in graduated cylinder. Press **VALUE (up or down)** to enter value measured in graduated cylinder.

NOTE: Use the same injection units as values programmed in Service Mode (oz. or ml).

10. Press **CHANGE VALUES** to confirm selection. Display shows:

ALKALINE	ACID
NEUTRAL	

** Indicates flashing position*

11. Insert tubing into **ALKALINE** Chemical Injection port (IP1) and tighten fitting.

12. Repeat steps 5 through 11. For calibration of **ACID** chemical (Port IP3, red tubing) if Second Reusable-Throwaway Chemical System option is present. Press **SELECT CYCLE** until **ACID** flashes on screen.

13. While in Calibration Menu, press **SELECT CYCLE** until **NEUTRAL** is flashing. Display shows:

ALKALINE	ACID
NEUTRAL	

** Indicates flashing position*

14. Press **CYCLE START** to confirm selection. Display shows:

LOWER pH*	RAISE pH
SET-UP	

**Indicates flashing position*

15. Press **SELECT CYCLE** until **LOWER pH** is flashing. Press **CYCLE START** to confirm selection. Display shows:

**PRESS START TP
TO ENERGIZE PUMP**

16. Push down on quick-disconnect ring and pull out black tubing and place tubing from pump 4 (IP4) in a 34 oz. (or more) (1 lt) graduated cylinder (see Figure 8-2).

17. Press **CYCLE/START** to initiate injection. Display shows:

**INJECTION IN
PROGRESS**

18. When injection is completed, display shows:

**CHEM. AMOUNT = XXX.X
PRESS CVTP TO SET**

19. Measure collected amount of chemical in graduated cylinder. Press **VALUE (up or down)** to enter value measured in graduated cylinder. Display shows:

**LOWER PH RAISE pH
SET-UP**

NOTE: Injection units used must be the same as values programmed in Service Mode (oz. or ml).

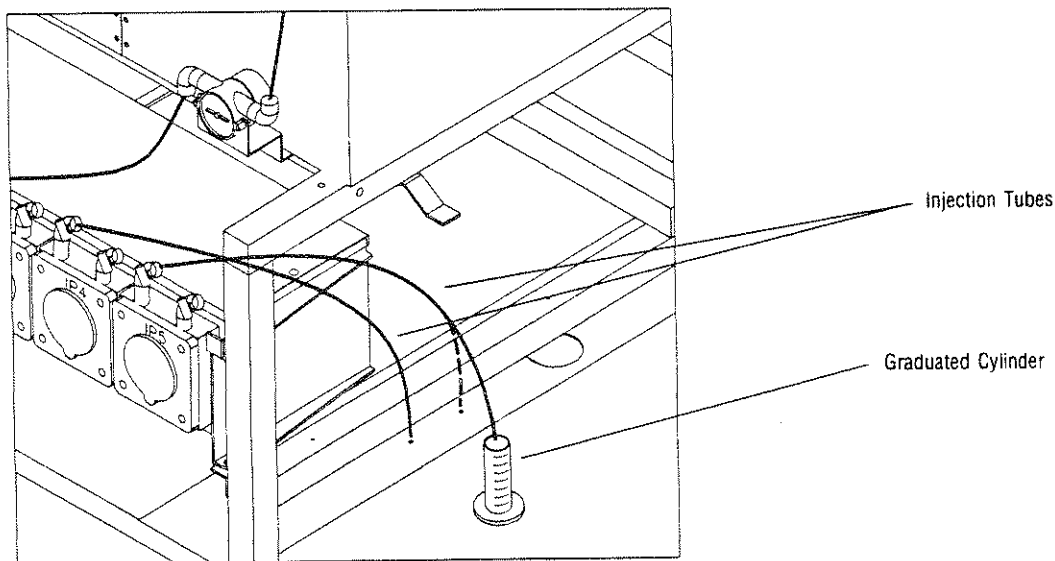
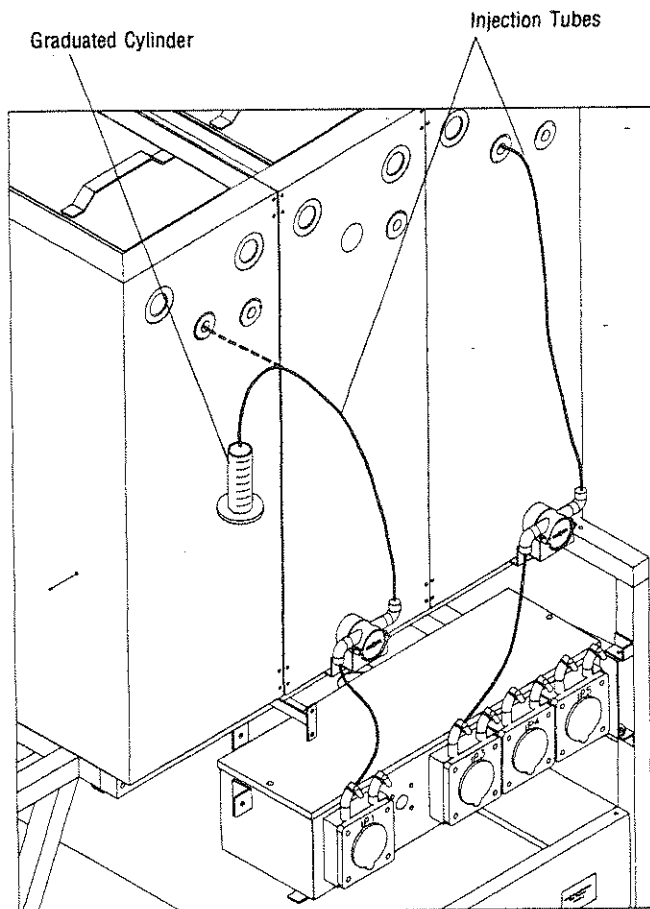
20. Press **CHANGE VALUES** to confirm selection. Display shows:

**LOWER PH* RAISE pH
SET-UP**

**Indicates flashing position*

21. Insert tubing back into Cooldown Tank port (IP4).

22. Repeat steps 3 through 10 to **RAISE pH** (IP5, white tubing). Press **SELECT CYCLE** until **RAISE pH** flashes on screen.



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Figure 8-2. Chemical Injection Ports

8.81 HOW TO SET PH RATIOS

8.81.1 STERIS® Chemicals

⚠ WARNING - CHEMICAL BURN/EYE INJURY HAZARD: Chemicals are caustic and can cause adverse effects to exposed tissues. Do not get in eyes, on skin or attempt to ingest by mouth.

- Read and follow the precautions and instructions on the chemical label and in the Material Safety Data Sheet (MSDS) prior to handling the chemical, refilling the chemical containers or servicing the chemical injection pumps and lines.

- Refer to MSDS for appropriate personal protective equipment (PPE) whenever handling chemicals or servicing chemical injection pumps and lines.

NOTE: The following tables will help you establish ratios for STERIS recommended chemicals only. For chemicals other than STERIS, follow manufacturer's recommendations.

NOTE: Values indicated in these tables comply with the following STERIS Chemicals:

- ALKALINE: Cage-Klenz 100, Cage Wash Detergent; Cage-Klenz 150, Cage Wash Detergent; Cage-Klenz 180, Cage Wash Detergent; and CV-Nutralizer.
- ACID: Cage-Klenz 200, Acid-Based Cage Wash Detergent; Cage-Klenz 220, Acid-Based Cage Wash Detergent; Cage-Klenz 250, Acid-Based Cage Wash Detergent; and Cage-Klenz 280, Acid-Based Cage Wash Detergent.

1) How to use the following Charts:

Using reference letter for each chemical, identify and circle both chemical names;

Draw a vertical line and a horizontal line from each chemical selected;

Circle value where the two lines intersect;

Transcribe this value in the parentheses.

STERIS Chemical	Reference Letter	Rnba (5.26)	D (Chemical used to neutralize)				
Alkaline Detergent CK/180	A		A (Solution to be neutralized)	CK-100	CK-150 CIP-150	CK-180	CV-Ne
Acid Detergent CK/250	B		CK-200	7.14	4.54	10	1.38
Acid Neutralizer CK/250	C		CK-220	2.85	1.92	4.34	0.55
Alkaline Neutralizer CK/180	D		CK-250	3.44	2.38	5.26	0.67
			CK-280	4.54	3.12	6.25	0.84

2) **STERIS chemicals used in this unit :**

Type of Chemical	STERIS Chemical Name	Table Reference Letter
Alkaline Detergent	_____	A
Acid Detergent	_____	B
Acid Neutralizer (To neutralize A)	_____	C
Alkaline Neutralizer (To neutralize B)	_____	D

Chart 1

Rnab (_____)	C (Chemical used to neutralize)			
A (Solution to be neutralized)	CK-200	CK-220	CK-250	CK-280
CK-100	0.14	0.35	0.29	0.22
CK-150/CIP-150	0.22	0.52	0.42	0.32
CK-180	0.1	0.23	0.19	0.16
CV-Neutralizer	0.72	1.79	1.48	1.18

Chart 2

Rnba (_____)	D (Chemical used to neutralize)			
B (Solution to be neutralized)	CK-100	CK-150 CIP-150	CK-180	CV-Neutralizer
CK-200	7.14	4.54	10	1.38
CK-220	2.85	1.92	4.34	0.55
CK-250	3.44	2.38	5.26	0.67
CK-280	4.54	3.12	6.25	0.84

Chart 3

Rba (_____)	A (Chemical used to neutralize)			
B (Solution to be neutralized)	CK-100	CK-150	CK-180	CV-Neutralizer
CK-200	7.14	4.54	10	1.38
CK-220	2.85	1.92	4.34	0.55
CK-250	3.44	2.38	5.26	0.67
CK-280	4.54	3.12	6.25	0.84

Chart 4

Rab (_____)	B (Chemical used to neutralize)			
A (Solution to be neutralized)	CK-200	CK-220	CK-250	CK-280
CK-100	0.14	0.35	0.29	0.22
CK-150	0.22	0.52	0.42	0.32
CK-180	0.1	0.23	0.19	0.16
CV-Neutralizer	0.72	1.79	1.48	1.18

Chart 5

Rnbna (_____)	D (Chemical used to neutralize)			
C (Solution to be neutralized)	CK-100	CK-150	CK-180	CV-Neutralizer
CK-200	7.14	4.54	10	1.38
CK-220	2.85	1.92	4.34	0.55
CK-250	3.44	2.38	5.26	0.67
CK-280	4.54	3.12	6.25	0.84

Chart 6

Rnanb (_____)	C (Chemical used to neutralize)			
D (Solution to be neutralized)	CK-200	CK-220	CK-250	CK-280
CK-100	0.14	0.35	0.29	0.22
CK-150	0.22	0.52	0.42	0.32
CK-180	0.1	0.23	0.19	0.16
CV-Neutralizer	0.72	1.79	1.48	1.18

8.81.2 Chemicals other than STERIS

WARNING - CHEMICAL BURN/EYE INJURY

HAZARD: Chemicals are caustic and can cause adverse effects to exposed tissues. Do not get in eyes, on skin or attempt to ingest by mouth.

- Read and follow the precautions and instructions on the chemical label and in the Material Safety Data Sheet (MSDS) prior to handling the chemical, refilling the chemical containers or servicing the chemical injection pumps and lines.

- Refer to MSDS for appropriate personal protective equipment (PPE) whenever handling chemicals or servicing chemical injection pumps and lines.

NOTE: For chemicals other than STERIS, follow manufacturer's recommendations.

1. Identify Chemicals used in this unit :

Type of Chemical	Chemical Name
Alkaline Detergent	_____
Acid Detergent	_____
Acid Neutralizer (To neutralize A)	_____
Alkaline Neutralizer (To neutralize B)	_____

2. Establish the ratios:

R_{nab} = Quantity of acid neutralizer needed to neutralize 1 ml of alkaline detergent. = _____

R_{nba} = Quantity of alkaline neutralizer needed to neutralize 1 ml of acid detergent. = _____


R_{ba} = Quantity of alkaline detergent needed to neutralize 1 ml of acid detergent. = _____

R_{ab} = Quantity of acid detergent needed to neutralize 1 ml of alkaline detergent. = _____

R_{nba} = Quantity of alkaline neutralizer needed to neutralize 1 ml of acid neutralizer. = _____

R_{nanb} = Quantity of acid neutralizer needed to neutralize 1 ml of alkaline detergent. = _____

8.82 HOW TO CALIBRATE CHEMICAL NEUTRALIZING PH SYSTEM (OPTION)

 **WARNING - CHEMICAL BURN/EYE INJURY HAZARD:** Chemicals are caustic and can cause adverse effects to exposed tissues. Do not get in eyes, on skin or attempt to ingest by mouth.

- Read and follow the precautions and instructions on the chemical label and in the Material Safety Data Sheet (MSDS) prior to handling the chemical, refilling the chemical containers or servicing the chemical injection pumps and lines.

- Refer to MSDS for appropriate personal protective equipment (PPE) whenever handling chemicals or servicing chemical injection pumps and lines.

1. While in Calibration Menu, press **SELECT CYCLE** until **SET-UP** is flashing. Display shows:

LOWER pH RAISE pH
SET-UP*

** Indicates flashing position*

2. Press **CYCLE START** to confirm selection. Display shows:

TANK 1 DET. TYPE.
ALKALINE*

** Indicates flashing position*

3. Press **VALUE (up or down)** to move from **ALKALINE** to **ACID**. Press **CHANGE VALUES** to confirm selection.
4. If Second Reusable-Throwaway Chemical System (option), display shows:

TANK 3 DET. TYPE.
ACID*

** Indicates flashing position*

NOTE: Depending on chemical used in tank, press **VALUE (up or down)** to select chemical type.

5. Press **VALUE (up or down)** to move from **ACID** to **ALKALINE**. Press **CHANGE VALUES** to confirm selection. Display shows:

ALKALINE < - LOWER pH
RATIO Rnab = X.XX

6. Enter ratio value obtained from chart 1 or Ratio Rnab if not using a STERIS chemical. Press and

hold **VALUE** to quickly increase or decrease ratio or press **VALUE (up or down)** to slowly increase or decrease ratio. Then press **CHANGE VALUES** to confirm selection.

7. Display shows next ratio value to be entered:

ACID < - RAISE pH
RATIO Rnba = X.XX

Enter ratio value obtained from table 2 or **Ratio Rnba** if not using a STERIS chemical. Press **VALUE (up or down)** to increase or decrease ratio. Then press **CHANGE VALUES** to confirm selection.

8. Display shows next ratio value to be entered:

ACID < - RAISE pH
RATIO Rba = X.XX

Enter ratio value obtained from table 3 or **Ratio Rba** if not using a STERIS chemical. Press **VALUE (up or down)** to increase or decrease ratio. Then press **CHANGE VALUES** to confirm selection.

9. Display shows next ratio value to be entered:

ALKALINE < - ACID
RATIO Rab = X.XX

Enter ratio value obtained from table 4 or **Ratio Rab** if not using a STERIS chemical. Press **VALUE (up or down)** to increase or decrease ratio. Then press **CHANGE VALUES** to confirm selection.

10. Display shows next ratio value to be entered:

LOWER pH < - RAISE pH
RATIO Rnbna = X.XX

Enter ratio value obtained from table 5 or **Ratio Rnbna** if not using a STERIS chemical. Press **VALUE (up or down)** to increase or decrease ratio. Then press **CHANGE VALUES** to confirm selection.

11. Display shows next ratio value to be entered:

LOWER pH < - LOWER pH
RATIO Rnanb = X.XX

Enter ratio value obtained from table 6 or **Ratio Rnanb** if not using a STERIS chemical. Press **VALUE (up or down)** to increase or decrease ratio. Then press **CHANGE VALUES** to confirm selection.

12. Display returns to:

LOWER pH RAISE pH
SET-UP*


** Indicates flashing position*

13. Then, press STOP/RESET until main Service Mode menu appears. Display shows:

TESTS*	CONSUMP.
SET-UP	CALIBRATE


* Indicates flashing position

8.83 HOW TO REPLACE TANKS CHEMICAL INJECTION PUMP FLOWMETER (FIGURE 9-25)

 **WARNING - CHEMICAL BURN/INJURY HAZARD:** Wear appropriate personal protective equipment (PPE) when removing clamps and replacing squeeze tubes. Residual chemicals might remain in used squeeze tubes. If chemical contacts skin or eyes. Immediately flush with running water for at least 10 minutes. If contact was with the eyes, seek medical attention.

1. Lock unit electrical disconnect switch in OFF position.
2. On service side, above chemical injection pump box, locate switch and unplug cable connector (LS1/3 for Tank #1 or LS3/3 for Tank #3).

NOTE: Be careful when removing tubing, put a container under tubing to avoid spilling of chemical on components or cables. If spill occurs wipe off and rinse immediately.

 **WARNING - CHEMICAL BURN/INJURY HAZARD:** Wear appropriate personal protective equipment (PPE) when moving clamps and replacing squeeze tubes. Residual chemicals might remain in used squeeze tubes. If chemical contacts skin or eyes. Immediately flush with running water for at least 10 minutes. If contact was with the eyes, seek medical attention.

3. Loosen two compression fittings (11) from flowmeter to remove tubing.
4. Remove flowmeter (10) and transfer two compression fittings to new one. Put Teflon tape on compression fitting threads.
5. Install new flowmeter on support (12) and plug cable connector.
6. Re-install tubing and tighten compression fittings.
7. Put unit electrical disconnect switch to ON position and enter SERVICE MODE (see Section 4).
8. Calibrate Chemical Injection Pump flowmeter (see Section 4).

8.84 HOW TO ADJUST MOTOR OVERLOAD RELAYS (FIGURE 9-20)

NOTE: It is important to re-set amperage on overload relay when replacing it with a new one. Re-set selector H/A, located on top of all overload relays must be set to H (hand). Use the following data for proper setting.

Overload relay OL1 for Pressure Pump (4).

- For 208V unit, set to 27.6 A
- For 480V unit, set to 12.2 A
- for 380/400/415V unit, set to 15.2 A

Overload relay OL2 for Suction Pump (6).

- For 208V unit, set to 8.5 A
- For 480V unit, set to 3.8 A
- for 380/400/415V unit, set to 4.8 A

Overload relay OL3 for Exhaust Fan (Exhaust Fan Option only) (8).

- For 208V unit, set to 5.0 A
- For 480V unit, set to 2.3 A
- for 380/400/415V unit, set to 2.4 A


Overload relay OL4 for Drying Fan (Vented Drying System Option only) (10).

- For 208V unit, set to 8.2 A
- For 480V unit, set to 3.7 A
- for 380/400/415V unit, set to 3.0 A

Overload relay OL5 for Neutralizing Pump (pH Neutralizing System Option only) (12).

- For 208V unit, set to 1.8 A
- For 480V unit, set to 0.6 A
- for 380/400/415V unit, set to 0.7 A

8.85 HOW TO ADJUST/INSTALL AIR FILTER/REGULATOR (FIGURE 9-21)

 **CAUTION: EQUIPMENT DAMAGE - Do not use carbon tetrachloride, trichloroethylene, thinner, acetone or similar solvents in cleaning any part of airline regulator or filter. Water and a mild soap is recommended.**


IMPORTANT: Make sure air flow is in direction indicated by arrow on filter body.

1. Before turning on system air pressure, turn filter/regulator adjustment (5) counterclockwise

until all load is removed from the regulating spring.

2. Turn on system pressure.
3. Turn filter/regulator adjustment (5) clockwise until the desired outlet pressure is reached (80-100 psig).
4. To avoid minor readjustment after making a change in pressure setting, always approach the desired pressure from a lower pressure. When reducing from a higher to a lower setting, first reduce to some pressure less than that desired, then bring up to the desired pressure.

8.86 QUICK-DISCONNECT PNEUMATIC FITTINGS (FIGURE 9-21)

 **WARNING - ELECTRIC SHOCK AND/OR BURN HAZARD:** Lock building electrical supply disconnect switch in OFF position and depressurize valves (main and auxiliary lines) before making repairs.

To remove tubing from a quick-disconnect pneumatic fitting (connector) that must be replaced, push outer ring inward and pull on tubing to release.

8.87 HOW TO REPLACE OR CLEAN THERMOSTATIC STEAM TRAP BELLOW (FIGURE 9-29)

If steam trap (4, 7, 11) stays open or closed all the time, replace bellow as follows:

1. Lock unit electrical disconnect switch in OFF position.
2. Remove steam trap from unit.
3. Open steam trap, using a pipe wrench.
4. Remove bellow from steam trap core, clean or replace with new one.
5. Re-connect two parts of steam trap together, and re-install in unit.


8.88 HOW TO REPAIR OR REPLACE IN-LINE HEAT EXCHANGER (FIGURE 9-22)

1. Pressure piping drain valve should be opened to make sure piping is empty prior to servicing In-line Heat Exchanger (see Section 4).

2. Enter Service Mode to open water heating to purge steam.
3. Lock unit electrical disconnect switch in OFF position and shut-off steam supply.
4. Let In-line Heat Exchanger (1) cool down.

NOTE: A 24-inch (47 cm) clearance is required on left hand side of mechanical core. Move mechanical core if clearance is insufficient.

5. Remove pressure piping (Fig. 9-17- # 4, 8) attached to the In-line Heat Exchanger.

 **WARNING - PERSONAL INJURY AND/OR EQUIPMENT DAMAGE HAZARD:** In-line Heat Exchanger is heavy. Two people are required to move In-line Heat Exchanger.

6. Remove all 8 bolts holding In-line Heat Exchanger head and remove S/S head.
7. Remove head gasket (2).
8. Remove tube plate with S/S tubes assembly.
9. Clean or replace s/s tubes assembly as necessary.
10. Re-install new head gasket.
11. Re-install S/S head and tighten 8 previously removed bolts.
12. Check for leaks and proper operation of In-line Heat Exchanger once steam supply is restored and unit is running.

8.89 HOW TO REPLACE WATER LEVEL SENSORS (FIGURE 9-23)

If a water level sensors fails, it must be replaced. One sensor is located on each side tank and two are present in cooldown tank (option).

1. Initiate a DRAIN CYCLE on tank where defective water level sensor (7) is located.
2. Lock unit electrical disconnect switch in OFF position.
3. Locate switch and unplug cable connectors.
4. Remove black plug (3) from tank jacket (exterior S/S panel).
5. Remove tank top cover (2) and, while holding Water Level Sensor (7), loosen external nut (8) and pull out switch.
6. Install new Water Level Switch.

NOTE: Plastic gasket (9) must be positioned inside tank. Small mark punched on float (12) should be positioned so that it is located at the top of the assembly. Re-install water level sensor (11) protection device.

7. Tighten nut, replace black cap and plug switch cable connectors.
8. Verify that Water Level Switch is vertical.
9. Replace tank cover.
10. Start unit and verify for leaks and for proper operation of new Water Level Switch.

8.90 HOW TO REPLACE CHEMICAL INJECTOR (FIGURE 9-23)

1. Drain tank using Drain Cycle
2. Lock unit electrical disconnect switch in OFF position and shut-off compressed air supply.
3. Remove black plug (3) attached to jacket (exterior S/S panel).
4. Loosen plastic elbow compression fitting attached to chemical injector (6).
5. Remove nut (4) holding injector in place located outside tanks.
6. From inside tank, remove injector (6) along with O'Ring (5).
7. Replace with new injector and/or gasket and re-install properly.
8. Re-install plastic elbow compression fitting and tighten.
9. Enter SERVICE MODE (see Section 4) and verify for leaks activating appropriate peristaltic pump (P1, P3).

8.91 CHEMICAL INJECTION PUMP (FIGURE 9-25)



WARNING - CHEMICAL BURN/EYE INJURY HAZARD: Wear appropriate personal protective equipment (PPE) when removing clamps and replacing squeeze tube. Residual chemicals might remain in used squeeze tube. If chemical contacts skin or eyes, immediately flush with running water for at least 10 minutes. If contact was with the eyes, seek medical attention.



WARNING - FALL HAZARD: To prevent falls, keep floors dry. Promptly clean up any spills or drippage.

The chemical injection pumps are located in front of the mechanical core in hinged box.

8.92 HOW TO REPLACE SQUEEZE TUBE (FIGURE 9-25)

The squeeze tubes should be replaced whenever tubes show signs of wear. Repeat the following procedures for each squeeze tube:

1. Lock building electrical supply disconnect switch in OFF position. Close unit supply valves.
2. Remove 5 screws (6) and remove Peristaltic pump cover (5).
3. Remove clamps (7) and disconnect the squeeze tube ends (8) (9) from the pickup and feed lines.
4. To remove squeeze tube (4) from pump head (2), pull out tube by one end. Discard the tube.
5. Clean all pump surfaces.
6. Insert one end of the new tube into pump head and rotate roller block manually.
7. Liberally spread Silicone Lubricant (P-117950-599) over rollers in the roller block and all tubing surface in contact with pump head.
8. Re-install pump cover to pump head and fasten with screws previously removed.
9. Connect ends of tube to pickup and feed lines. Attach clamps to both lines.
10. Position POWER switch to POWER, initiate a cycle, and check squeeze tube operation.

8.93 HOW TO REPLACE ROLLER BLOCK ASSEMBLY # 117950-601 (SEE FIGURE 9-25)



WARNING - CHEMICAL BURN/EYE INJURY HAZARD: Wear gloves and eye protection when removing clamps and replacing squeeze tube. Residual chemicals might remain in used squeeze tube. If chemical contacts skin or eyes, immediately flush with running water for at least 10 minutes. If contact was with the eyes, seek medical attention.




WARNING - CHEMICAL BURN/EYE INJURY HAZARD: Wear appropriate personal protective equipment (PPE) when removing clamps and replacing squeeze tube. Residual chemicals might remain in used squeeze tube. If chemical contacts skin or eyes, immediately flush with running water for at least 10 minutes. If contact was with the eyes, seek medical attention.

The roller block assembly, including roller block

and head kit, should be replaced whenever the block shows signs of wear. Worn roller block assembly may greatly reduce pump flow.

1. Lock building electrical supply disconnect switch in OFF position. Close unit supply valves.
2. Remove five screws (6) attaching pump cover (5) to pump head kit (2). Lift cover away from head kit.
3. Pulling on one end of squeeze tube (4), pull tube out of pump head kit.
4. Using an Allen hex key, remove set screw. Lift roller block (3) out of head kit.
5. Install new roller block. Make sure pins are positioned towards exterior. Tight set screw.
6. Clean all pump surfaces.
7. Insert one end of tube into pump head and rotate roller block manually.
8. Liberally spread Silicone Lubricant (P-117950-599) over rollers in the roller block and all tubing surface in contact with pump head.
9. Re-install pump cover to pump head and fasten with screws previously removed.


 **CAUTION: Carefully tighten set screw. The metal set screw can easily strip the plastic threads in the roller block assembly.**


10. Unlock building electrical supply disconnect switch and set in ON position. Follow priming procedure as explained in section 4.4.3 to fill tubing with chemical.

11. Enter Service Mode. Check for pump operation.

IMPORTANT: Calibrate Chemical Injection Pump.

8.94 HOW TO REPLACE CHEMICAL INJECTION PUMP MOTOR (SEE FIGURE 9-25)

 **WARNING - ELECTRIC SHOCK AND/OR BURN HAZARD: Disconnect all utilities to washer before servicing. Do not service the washer unless all utilities have been properly locked out. Refer to Summary of Warnings and Cautions for expanded warning.**

 **WARNING - CHEMICAL BURN/EYE INJURY HAZARD: Wear appropriate personal protective equipment (PPE) when removing clamps and re-**


placing squeeze tube. Residual chemicals might remain in used squeeze tube. If chemical contacts skin or eyes, immediately flush with running water for at least 10 minutes. If contact was with the eyes, seek medical attention.

1. Lock building electrical supply disconnect switch in OFF position and pull chemical compartment cover (15).


2. Remove clamps (7) and disconnect tube ends.

NOTE: Make note of electrical connections for re-assembly.

3. Pulling on one end of squeeze tube (4), pull tube out of pump head kit.
4. Disconnect quick connections from the motor.
5. Remove screws attaching pump cover to pump head kit. Lift cover away from head kit.
6. Using an Allen hex key, remove set screw. Lift roller block (3) out of head kit.
7. Remove screws (6) attaching head kit (2) to motor (1), remove motor from chemical compartment (14).
8. Remove two screws holding head kit in place. Pull head kit away from pump motor.
9. Remove two screws fastening motor to pump assembly base.

 **CAUTION: Make sure a cooling fan is attached to rear motor shaft. Check that the fan blades are positioned to send airflow to motor. Motor will overheat without a cooling fan.**

10. Attach head kit to new motor with screws previously removed.
11. Clean all pump surfaces.

 **CAUTION: Carefully tighten set screw. The metal set screw can easily strip the plastic threads in the roller block assembly.**

12. Place roller block in head kit. Carefully tighten set screw using an Allen hex key.
13. Reconnect all wiring.
14. Close injection pump compartment cover (15). Secure with screws previously removed.
15. Connect one end of squeeze tube (4) to feed line (8) and attach clamps.
16. Insert other end of squeeze tube into head kit (2). Feed tube through head kit by manually rotating roller block.


17. Liberally spread Silicone Lubricant (P/N 117950-599) over rollers in roller block and all tubing surfaces in contact with the pump head kit.
18. Return cover to head kit and fasten with screws previously removed.
19. Place pick up tube (9) into container.
20. Unlock building electrical supply disconnect switch and set in ON position. Test pump in service mode.
21. Open unit supply valves and initiate a cycle. Check pump motor operation.


8.95 VALVES (FIGURES 9-26, 9-27 AND 9-28)


A solenoid valve is a combination of two basic functional units — 1) a solenoid (electromagnet) with its pivot arm (plunger), and 2) a valve containing an orifice in which a seal or plug is positioned to stop or allow flow. The valve is opened or closed by movement of the magnetic pivot arm (plunger) which is drawn into the solenoid when the coil is energized. The solenoid is mounted directly on the valve housing.


NOTE: When installing new valves in any line, note the arrow stamped on the valve body or the words "IN" and "OUT" stamped at the inlet and outlet ports. A reversed valve cannot operate properly.

8.95.1 Water And Steam DIN Connector Solenoid Valves

 **WARNING - ELECTRIC SHOCK AND/OR BURN HAZARD:** Disconnect all utilities to washer/disinfector before servicing. Do not service the washer/disinfector unless all utilities have been properly locked out. Refer to Summary of Warnings and Cautions for expanded warning.

 **WARNING - ELECTRIC SHOCK AND/OR BURN HAZARD:** Lock building electrical supply in OFF and close unit supply valves before performing any service on the unit. If unit is started during maintenance procedures, hot water/steam may be sprayed into wash chamber.

 **WARNING - FALL HAZARD:** To prevent falls, keep floors dry. Promptly clean up any spills or drippage.

 **WARNING - BURN HAZARD:** Allow unit to cool down before performing any service on the pump. Piping and valves become very hot during unit operation.

1. Water and steam inlet valves are generally the diaphragm type and must be serviced when the valve is leaking (constant flow in piping) or does not open.
2. The diaphragm-type solenoid valve has a pilot and a bleed orifice. It utilizes line pressure for operation. When the solenoid is energized, it opens the pilot orifice and releases pressure from the top of the valve piston or diaphragm to the outlet side of the valve. This results in an unbalanced pressure which causes the line pressure to lift the piston or diaphragm off the main orifice, thereby opening the valve. When the solenoid is de-energized, the pilot is closed and full line pressure is applied to the top of the piston or diaphragm through the bleed orifice, thereby providing a seating force for tight closure.

8.95.2 Constant Flow (Leaking Valve)

1. A leaking valve is usually due to a worn diaphragm. Diaphragm must be replaced according to the manufacturer's instructions included in the repair kit. The valve repair kit includes all parts necessary for a complete valve overhaul.
2. Valve may also leak due to debris interfering with diaphragm movement. When overhauling valve, thoroughly inspect valve for small solder beads or Teflon tape.

NOTE: When installing/repairing BURKERT diaphragm or piston-type valves, it will be necessary to separate solenoid base from valve bonnet to facilitate removal, repair and/or installation. When valve is reassembled, make sure no Teflon tape or pipe sealer is used between solenoid base and valve bonnet. When Teflon tape or pipe sealer is used, it can find its way into core tube and inhibit proper traveling of core/disc. If core/disc does not seat correctly into copper ring at top inside of core tube, valve will emit an audible buzzing sound.

8.95.3 No Flow (Valve Does Not Open)

1. Check strainers. Strainer can easily become clogged enough to prevent flow.
2. Energize the solenoid coil. A metallic click signifies solenoid operation. Absence of the click can indicate loss of power supply, defective coil or improper connection. Check the following:

a) Voltage across the coil leads. When energized by the controller, it should be approximately 120 volts. When de-energized, it will be approximately 2 volts. Solenoid coil resistance is 212.5 ohms for 1/2" NPT water solenoid valves, 214.1 ohms for 1/2" NPT steam solenoid valves, and 103 ohms for 3/4" NPT steam solenoid valves.

b) Solenoid coil for open/short circuit or ground.

3. Check valve diaphragm. Pinhole on downstream side of diaphragm may be clogged or diaphragm may be installed backwards.
4. Energize and de-energize the coil. Check valve operation for proper opening and closing. A loud hum and sluggish operation indicate the coil is probably defective and must be replaced. Replace coil as follows:

⚠ CAUTION: Solenoid valves are equipped with a special material which can be attacked by oils and grease. When replacing entire valve, wipe threads clean of cutting oils and use Teflon tape to seal pipe joints.

- a) Remove screw holding DIN Plug Connector in place.
 - b) Disconnect DIN Plug Connector from solenoid housing.
 - c) Untighten four screws on valve cap.
 - d) Lift off solenoid housing from solenoid valve assembly.
 - e) Replace with new solenoid housing.
 - f) Plug Connector set screw back to hold Connector in place.
5. Check valve diaphragm. Pinhole on downstream side of diaphragm may be clogged, or diaphragm may be installed backwards.
 6. Inspect the valve for evidence of leakage. A worn valve seat will cause the valve to leak when closed. A damaged or worn seat cannot be repaired. If seat is damaged, valve must be replaced.

8.95.4 How to Replace or Repair Pneumatic Block Valve (Figure 9-21)

⚠ WARNING - ELECTRIC SHOCK AND/OR BURN HAZARD: Lock building electrical supply disconnect switch in OFF position and de-pressurize valve (main and auxiliary lines) before making repairs.

1. Lock unit electrical disconnect switch in OFF position and turn off compressed air supply. Purge compressed air system.
2. Remove top and bottom block valve support (1) angles.
3. Remove Allen screw located on right hand side of block valve (31).
4. Carefully push all valves located on the right side of the defective valve to the right.
5. IMPORTANT: push defective valve approximately 1 inch (2 cm) to the right.
6. Pull out defective valve by lifting bottom and removing it.

NOTE: Put white grease on O-Rings and gasket from defective valve and/or on O-Rings supplied with the new valve. It is also possible to use a valve that is not being used on the block valve (a valve with two pneumatic caps). If you do so, make sure not to mix the sequencing of the valves, since each valve has an address depending on its position.

7. Re-install all valves and secure with previously removed Allen screws.
8. Verify for air leaks, once power and compressed air supply restored.

NOTE: 3 O-Ring/valves, 1 gasket between solenoid and valve body (26).

8.95.5 Air DIN Connector Solenoid Valves (Figure 9-21)

⚠ WARNING - ELECTRIC SHOCK AND/OR BURN HAZARD: Lock building electrical supply disconnect switch in OFF position and de-pressurize valve (main and auxiliary lines) before making repairs.

An air solenoid valve must be serviced whenever sluggish valve operation, excessive noise or leakage occurs.

1. If valve fails to operate, proceed as follows:
2. Check air filter (38). Filter can easily become clogged enough to prevent flow.
3. In Service mode, energize the solenoid coil. A metallic click signifies solenoid operation. Absence of a click can indicate loss of power supply, defective coil or improper connection. To correct, verify the following:
 - Energize and de-energize the coil. Check valve operation for proper opening and closing. A loud hum and sluggish operation indicate the coil is probably defective.

- To replace coil, proceed as follows: (see Section 8.81 to separate the valve from others).
 - a) Disconnect the solenoid valve (22, 26) from valve body.
 - b) Remove retaining screws and slip coil off.
Put white grease on gasket (26).
 - c) Install new coil (22) and replace retaining screws 26).
 - d) Reconnect the valves together carefully (26).

Table 8-1. DIP SWITCH DEFAULT SETTINGS

Main Console Printer PC Board (Figure 9-14b)

Dip Switch Position:	1	2	3	4	5	6
SW1:	0	1	0	0	0	0

0=OFF 1=ON

Note: Set Dip Switch # 1 to ON position to perform a Printer Self Test.

Table 8-2. DIP SWITCH DEFAULT SETTINGS

Main Console Interface PC Board (Figure 9-14b)

Dip Switch Position:	1	2	3	4	5	6
SW1:	1	1	0	0	0	0

0=OFF 1=ON

Note: Set Dip Switch # 6 to ON position to perform a Display Self Test.

Table 8-3. DIP SWITCH DEFAULT SETTINGS

Remote Console Interface PC Board (Figure 9-14c)

Dip Switch Position:	1	2	3	4	5	6
SW1:	1	0	1	0	0	0

0=OFF 1=ON

Note: Set Dip Switch # 6 to ON position to perform a Display Self Test.

Table 8-4. DIP SWITCH DEFAULT SETTINGS

Control Board Slot #1 (Figure 9-20 & 9-20b)

Dip Switch Position:	1	2	3	4	5	6	7	
SW1:	1	0	0	1	1	0	0	(Set Channel 0 as a RTD analog input)
SW2:	1	0	0	1	1	0	0	(Set Channel 0 as a RTD analog input)
SW3:	1	0	0	1	1	0	0	(Set Channel 0 as a RTD analog input)
SW4:	1	0	1	0	0	1	0	(Set Channel 3 as a 4-20ma analog input)

0=OFF 1=ON

Table 8-5. DIP SWITCH DEFAULT SETTINGS

I/O Board Slot #5 (Figure 9-20 & 9-20c)

Dip Switch Position:	1	2	3	4	5	6	7	8	
Sw1:	0	1	0	0	0	0	0	1	Set Board address: 2
SW2:	0	0	0	0	0	0	0	0	(Set Outputs 9 to 16 as OPTO)
SW3:	0	0	0	0	0	0	0	0	(Set Outputs 1 to 8 as OPTO)

0=OFF 1=ON

Table 8-6. DIP SWITCH DEFAULT SETTINGS

I/O Board Slot #6 (Figure 9-20 & 9-20c)

Dip Switch Position:	1	2	3	4	5	6	7	8	
SW1:	1	1	0	0	0	0	0	1	(Set Board address:3)
SW2:	0	0	0	0	0	0	0	0	(Set Outputs 9 to 16 as OPTO)
SW3:	0	0	0	0	0	0	0	0	(Set Outputs 1 to 8 as OPTO)

0=OFF 1=ON

Table 8-7. DIP SWITCH DEFAULT SETTINGS

I/O Board Slot #7 (Figure 9-20 & 9-20c)

Dip Switch Position:	1	2	3	4	5	6	7	8	
SW1:	0	0	1	0	0	0	0	1	(Set Board address:4)
SW2:	0	0	0	0	0	0	0	0	(Set Outputs 9 to 16 as OPTO)
SW3:	0	0	0	0	0	0	0	0	(Set Outputs 1 to 8 as OPTO)

0=OFF 1=ON

Section 9: Illustrated Parts Breakdown

Assemblies and components of the Basil® 9500 are illustrated and identified on the following pages. The part number, the description and the quantity required for each usage are given. Each indentation in the description represents the assembly level. The UNITS PER ASSEMBLY column is specific for the given assembly or subassembly level.



CAUTION: To prevent voiding the warranty or damaging the equipment, use only authorized STERIS replacement parts.

9.1 HOW TO USE THE ILLUSTRATED PARTS BREAKDOWN

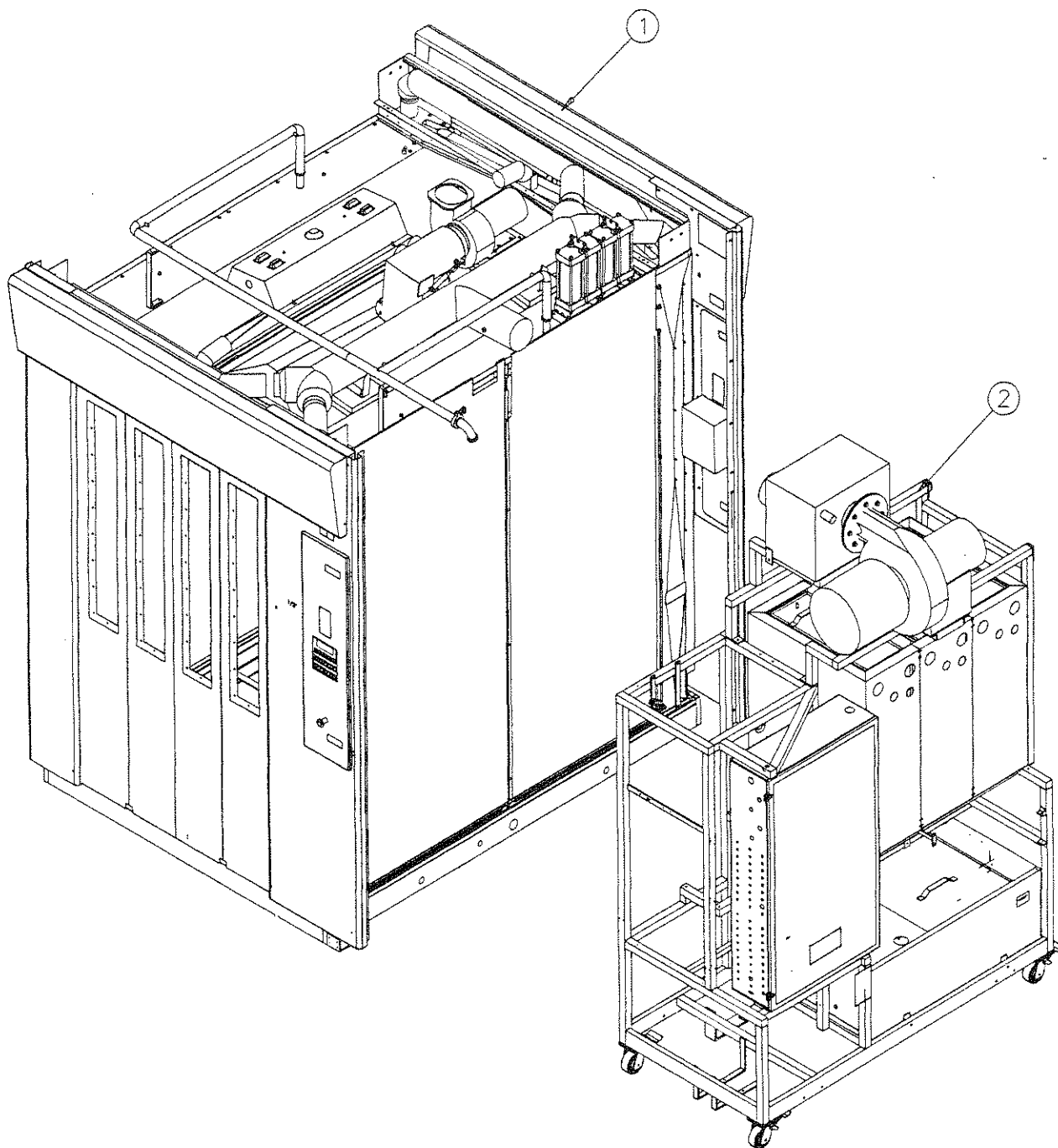
1. Determine the function and application of the part required. Select the most appropriate subassemblies from the List of Illustrations. Note the illustration page number.
2. Turn to the page indicated and locate the desired part on the illustration.
3. From the illustration, obtain the index number assigned to the part desired. Refer to the accompanying tabular list (usually on the facing page) for the STERIS part number and description of part.

Typical Identification Example

One indentation –
first subassembly,
part of assembly
under which it is
indented

No indentation –
part of top
assembly

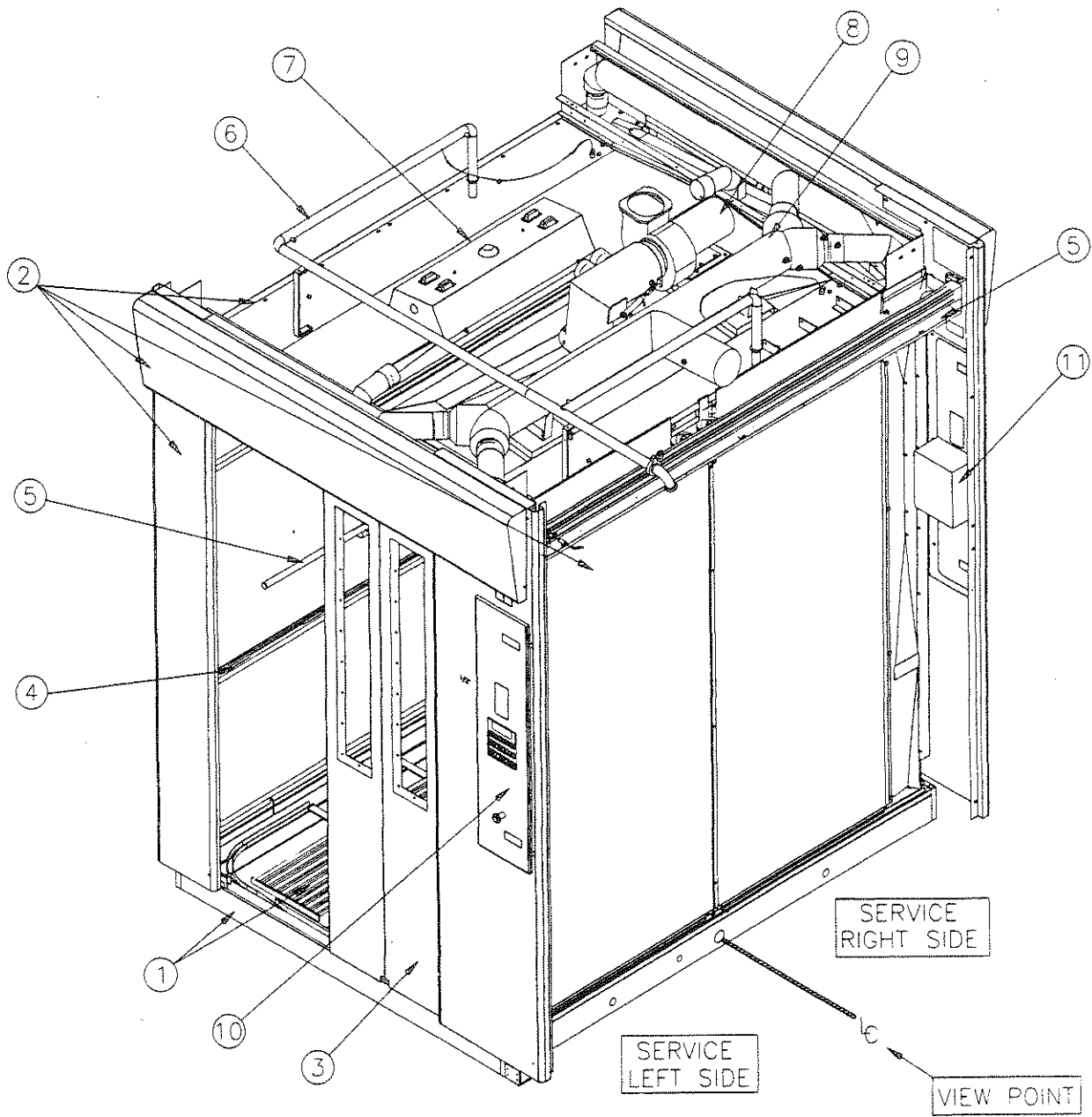
HOT WATER SUPPLY PIPING, PURE W AND COLD WATER SUPPLY TO CONDE				
1	P	117950	177	Strainer, Water, 1/2" f
2	P	117956	359	Valve, Solenoid, Water, 1/2"
	P	117950	174	• Kit, Repair
	P	117955	186	• Coil, Spare
3	P	117950	216	Valve, Swing Check, 1/2"
4	P	117956	362	Valve, Solenoid, S/S, Water, 1/2"
	P	117955	193	• Kit, Repair
	P	117955	194	• Coil, Spare
5	P	117954	297	Adapter, Pure Water Inlet, 1/2" NPT



REF.: #122-998-085

Figure 9-1. Basil® 9500, Cage and Rack Washer, Complete

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY
9-1 1 2			BASIL® 9500, CAGE AND RACK WASHER, COMPLETE Basil 9500, Washer Section (see Figure 9-2 for Subassemblies) Basil 9500, Mechanical Core Section (see Figure 9-3 for Subassemblies)	



REF.: #122-998-025

Figure 9-2. Basil® 9500, Washer Subassemblies

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY
9-2			BASIL® 9500, WASHER SUBASSEMBLIES	
1			Sump and Floor Ass'y (see Figure 9-4a and 9-4b for Subassemblies)	
2			Cabinet Ass'y (see Figure 9-5 for Subassemblies)	
3			Door Ass'y (see Figure 9-6 for Subassemblies)	
4			Safety Guard Rails (see Figure 9-7 for Subassemblies)	
5			Spray Headers and Traveler System Ass'y (see Figure 9-8 for Subassemblies)	
6			Top Pressure Piping and Manifold Coupling System (see Figure 9-9 for Subassemblies)	
7			Interior Light Ass'y (see Figure 9-10 for Subassemblies)	
8			Damper and Exhaust Fan Ass'y (see Figure 9-11 for Subassemblies)	
9			Drying System Ass'y (see Figure 9-12 for Subassemblies)	
10			Control Panel Ass'y (see Figure 9-13 for Subassemblies)	
11			Secondary or Main Control Box Ass'y (see Figure 9-14 for Subassemblies)	
12			Wash Chamber Sensors, Limit Switches and Indicating Lights (see Figure 9-15 for Subassemblies) (Not shown)	

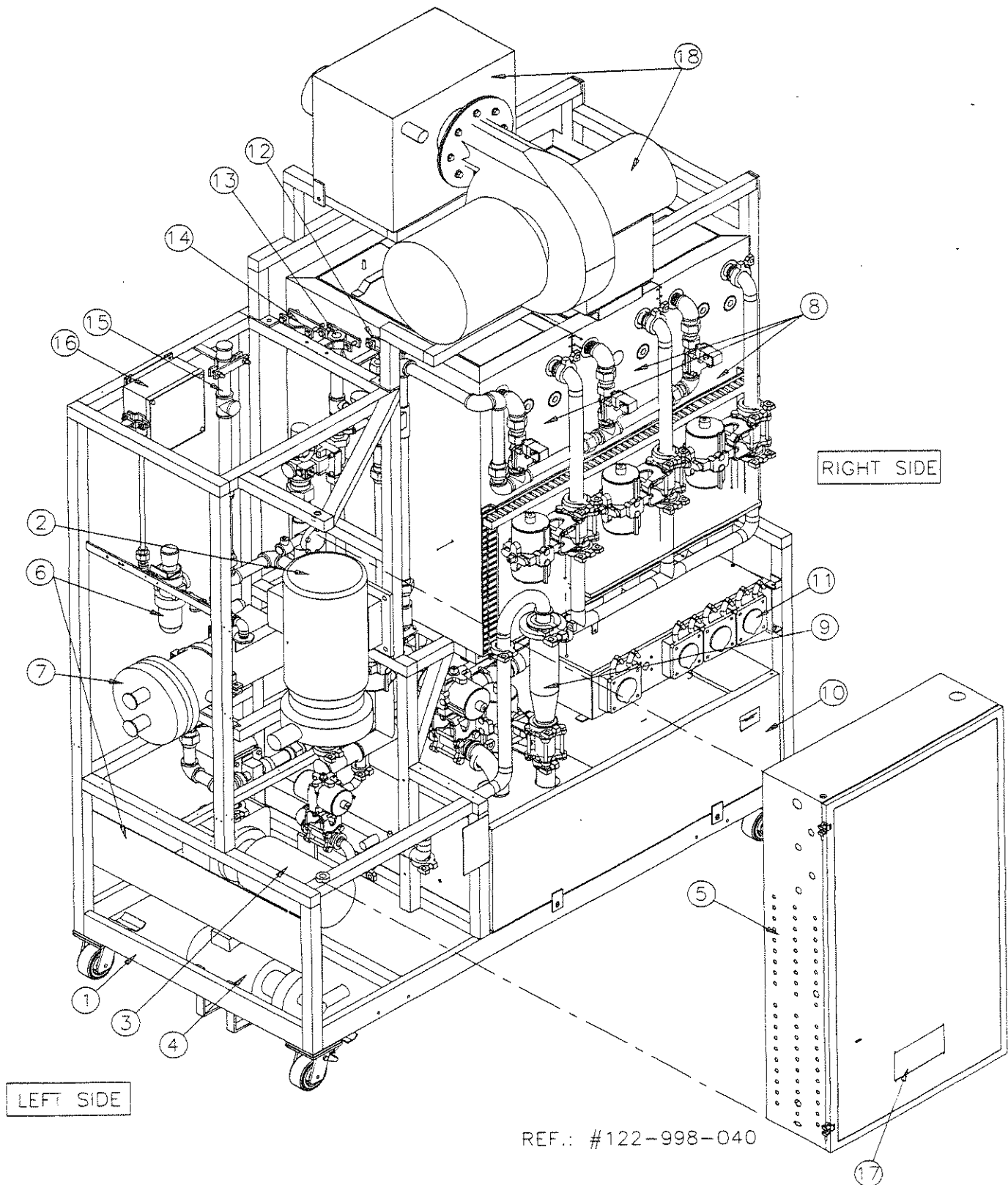
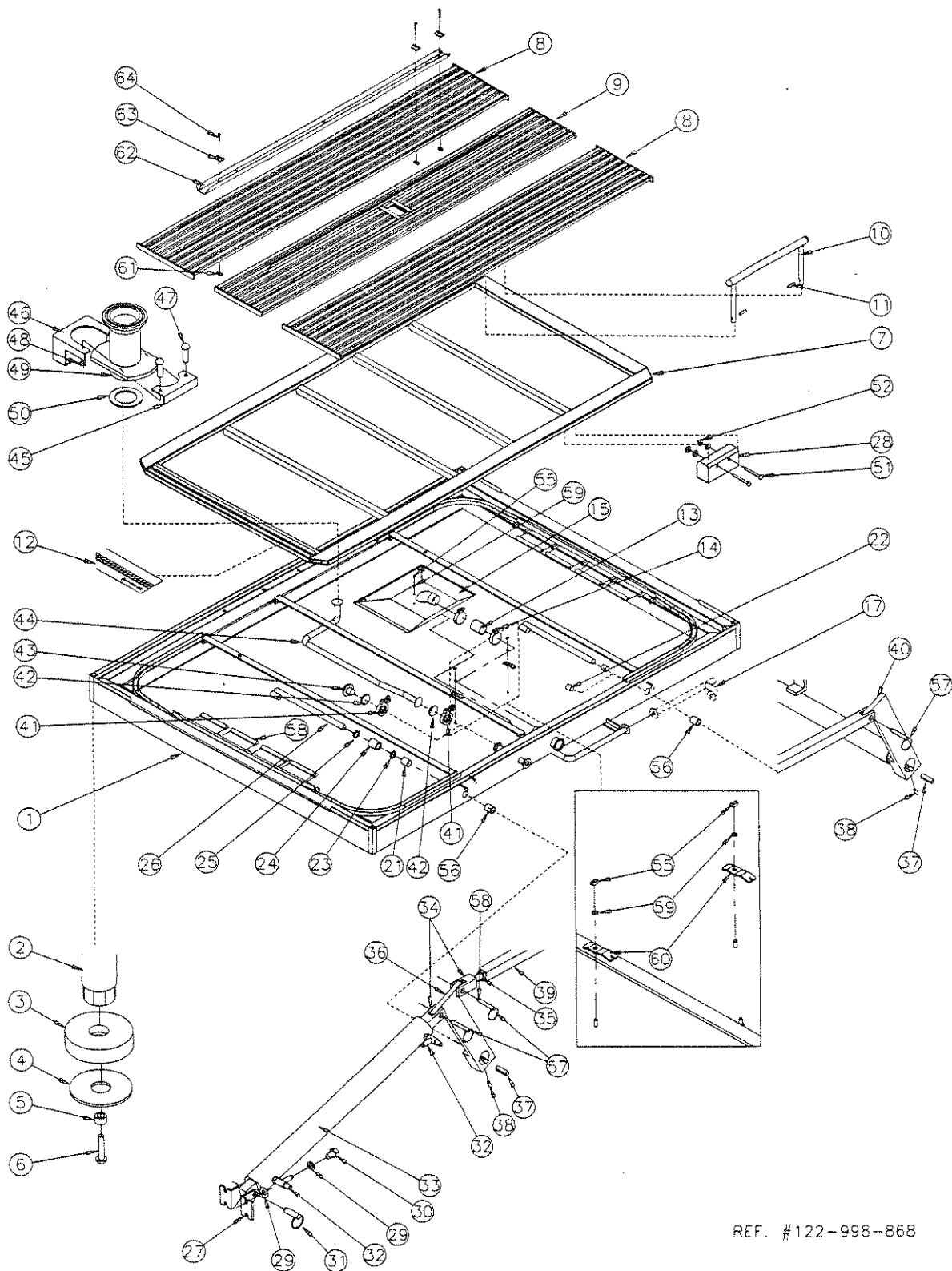


Figure 9-3. Basil® 9500, Mechanical Core Subassemblies

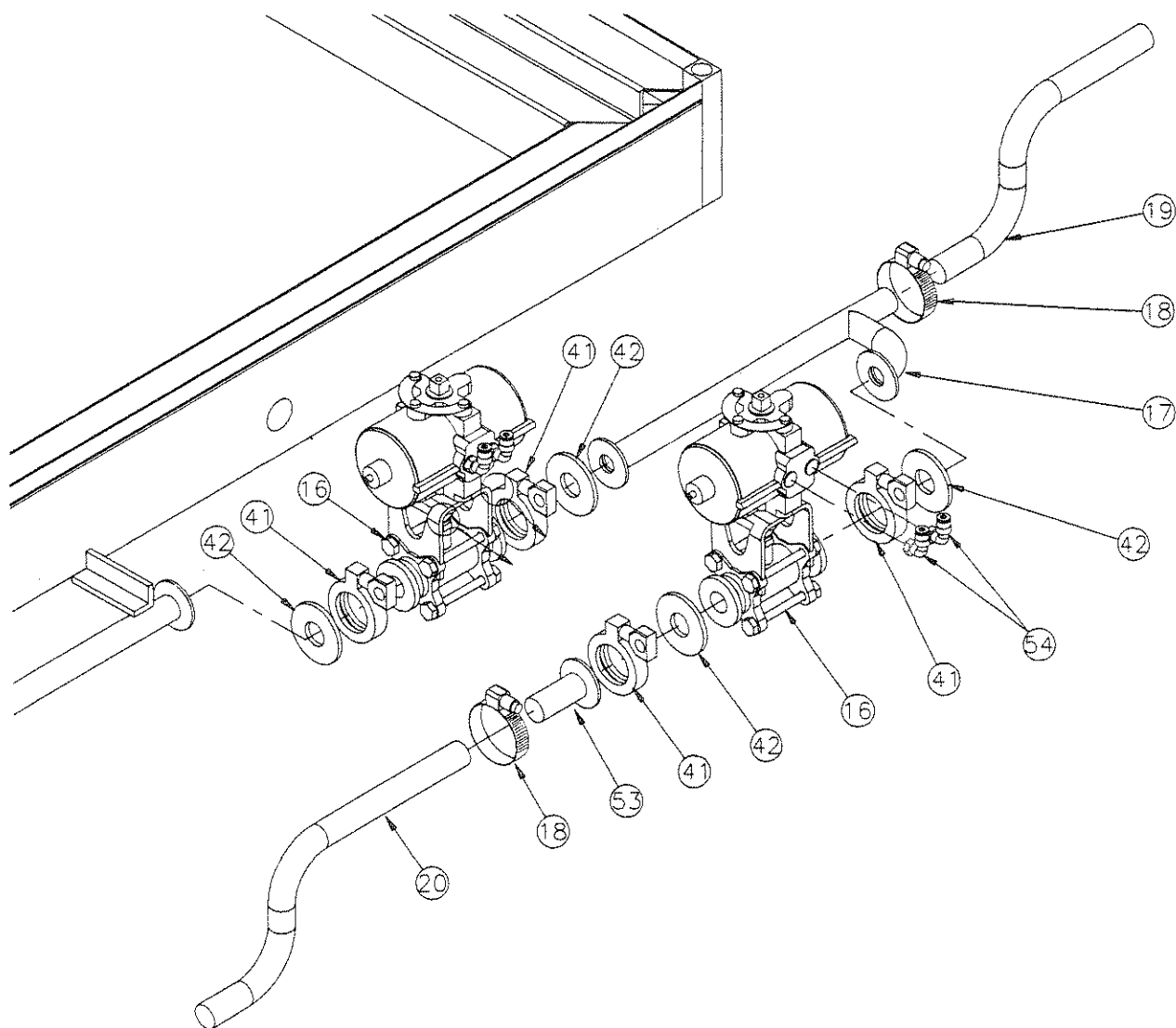
FIG. & ITEM NO.	PART NUMBER			S V C	DESCRIPTION	UNITS PER ASSEMBLY		
9-3					BASIL® 9500, MECHANICAL CORE SUBASSEMBLIES			
1					Mechanical Core Frame (see Figure 9-16 for Subassemblies)			
2					Pressure Piping with Additional Chemical Tank, with Manifold			
3					Coupling System (see Figure 9-17 for Subassemblies)			
4					Suction Pump and Return Piping Ass'y (see Figure 9-18 for Subassemblies)			
5					Drain Piping with pH Neutralizing, Drain Piping with Cooldown			
6					Tank Only (see Figure 9-19 for Subassemblies)			
7					Main Electrical Box Ass'y (see Figure 9-20 for Subassemblies)			
8					Compressed Air Inlet & Pneumatic Block Valve (see Figure 9-21 for Subassemblies)			
9					Heat Exchanger Ass'y (see Figure 9-22 for Subassemblies)			
10					Solution Tank Ass'y (see Figure 9-23 for Subassemblies)			
11					Self Cleaning Filter Ass'y (see Figure 9-18 for Subassemblies)			
12					Cooldown Tank Ass'y (see Figure 9-24 for Subassemblies)			
13					Detergent Pump Box Ass'y (see Figure 9-25 for Subassemblies)			
14					Hot Water Supply Piping (see Figure 9-26 for Subassemblies)			
15					Cold Water Supply Piping Ass'y (see Figure 9-27 for Subassemblies)			
16					Steam Supply Piping (see Figure 9-28 for Subassemblies)			
17					Steam Return Line (see Figure 9-29 for Subassemblies)			
18	117909	558			Box, Electric, Ass'y, Customer Connections (see Figure 9-30 for Subassemblies)			
					pH Controller			
					Drying Package Ass'y (see Figure 9-31 for Subassemblies)			



REF. #122-998-868

Figure 9-4a. Sump and Floor Assembly (Part 1 of 2)

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-4a			SUMP AND FLOOR ASS'Y (BASIC UNIT)	X			
9-4b			AUTO FLOOR TILT (OPTION)		X		
			MANIFOLD COUPLING (OPTION)			X	
1	117989	144	Sump	1			
2	117997	089	Leg, Adjustable	4			
3	117997	336	Base, Adjustable Leg	4			
4	117997	092	Absorber, Washer Leg	4			
5	117996	389	Spacer	4			
6	117907	873	Screw, Truss Head, S/S, 8-32 x 5/8"	4			
7	117005	274	Floor Frame	1			
8	117997	560	X Floor Grating, Side Section	2			
9	117997	558	X Floor Grating, Central Section, STD	1			
	117997	559	X Floor Grating, Central Section, with Manifold Coupling			1	
10	117997	598	X Handle, Floor Grating	3			
11	117906	220	X Pin, Spring, 1/8" x 1/2"	6			
12	117909	950	X Sticker	2			
13	117950	688	X Hose, 2" x 2-1/4", Black	1			
14	117950	673	X Clamp, S/S, #32, 1-9/16" x 2-1/2"	2			
15	117996	366	X Suction Plate, Sump (Units up to S/N 3624599000)	1			
	117005	771	X Suction Plate, Sump (Units with S/N from 3624599001)	1			
16	117909	604	X Valve, Pneumatic Ball, 1" Ass'y (see Figure 9-4b)	2			
17	117997	706	Piping, Drain Sump & Suction Pump (see Figure 9-4b)	1			
18	117950	787	X Clamp, S/S, #16, 11/16" x 1-1/2" (see Figure 9-4b)	2			
19	117909	599	X Hose, Rubber, Flexible, 1" (see Figure 9-4b)	A/R			
20	117909	599	X Hose, Rubber, Flexible, 1" (see Figure 9-4b)	A/R			
21	117909	429	X Bushing, Oil, 1-1/8"OD x 1"ID x 1"Lg (Inside)		2		
22	117940	779	Cap Plug, S/S, 1"F	2			
23	117956	047	X O'Ring, 1-1/4"OD x 1"ID		2		
24	117995	734	X Cap plug, Modified, Auto Floor Tilt		2		
25	117995	733	X Washer, Auto Floor Tilt		2		
26	117995	732	X Shaft, Auto Floor Tilt		2		
27	117902	709	X Pivot, Bracket, Cylinder 1-1/2"		1		
28	117995	731	X Block, Plastic, Auto Floor Tilt		2		
29	117950	976	X Washer, S/S, 1/4"		4		
30	117950	900	X Bolt, S/S, 1/4-20 x 3/4"		4		
31	117909	884	X Hitch Pin, S/S, 3/8" x 1-1/8"Lg		1		
32	117902	318	X Valve, Micrometric, 1/8"M x 1/4"OD		2		
33	117909	455	X Cylinder, Pneumatic, S.B. 10" x 1-1/2" Bore		1		
34	117997	971	X Clevis, S/S, Cylinder 1-1/2"		2		
35	117904	007	X Nut, Locking, S/S, 7/16-20		2		
36	117995	728	X Lever, Floor Tilt		1		
37	117996	387	X Square Key, Auto Floor Tilt		2		
38	117957	221	X Screw, Socket Head, S/S, 1/4-20 x 1/4"		2		
39	117995	729	X Shaft, Floor Tilt		1		
40	117995	730	X Lever, Floor Tilt		1		
41	117951	196	X Clamp, Quick Disconnect, 1-1/2"	5			1
42	117951	650	X Gasket, Viton, 1"	5			1
43	117909	363	X Cap, Tri-Clamp, 304, S/S, 1" & 1-1/2"	1			
44	117995	700	Piping, Manifold Coupling			1	
45	117999	128	X Stopper, Sliding Inlet			1	
46	117999	144	X Stopper, Sliding Inlet			1	
47	117950	849	X Screw, Truss Head, S/S, 6-32 x 1/4"			2	
48	117950	949	X Nut, S/S, 6-32			2	
49	117995	725	X Sliding Inlet, Manifold Coupling			1	
50	117956	047	X O'Ring, 1-1/4"OD x 1"ID, Sliding Inlet			1	
51	117950	871	X Screw, Truss Head, S/S, 10-32 x 1-1/2"		4		
52	117950	951	X Nut, S/S, 10-32		8		
53	117909	602	Adapter, Rubber Hose (see Figure 9-4b)	1			
54	117951	837	X Connector, Elbow, Pneumatic, 90°, 1/8"ORB x 1/4"OD	4			



REF.: #122-998-084

Figure 9-4b. Sump and Floor Assembly (Part 2 of 2)

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-4a			SUMP AND FLOOR ASS'Y (BASIC UNIT)	X			
9-4b			AUTO FLOOR TILT (OPTION)		X		
			MANIFOLD COUPLING (OPTION)			X	
55	117957	192	Wing Nut, S/S 1/4"-20	3			
56	117909	430	X Bushing, Oil, 1-1/8" OD x 1" ID x 1-1/2" Lg, outside		2		
57	117005	750	X Pin, Quick-release, S/S, 3/8" x 0.800"		3		
58	117908	938	X Gasket, EPDM D (Up to S/N 3623799011)		A/R		
59	117910	027	X Washer, Teflon, 7/16" OD x 13/64" ID x 1/32"	2	2		2
60	117005	828	X Bracket, Holding, Suction Plate	2	2		2
61	117999	331	X Lock, Bottle Rack Guide	3	3		3
62	117996	803	X Track Guide, Bottle Cart Guide	1	1		1
63	117005	879	X Fixture, Bottle Cart Guide	3	3		3
64	117950	871	X Screw, S/S, Truss Head, 10-322 x 1-1/2"	3	3		3

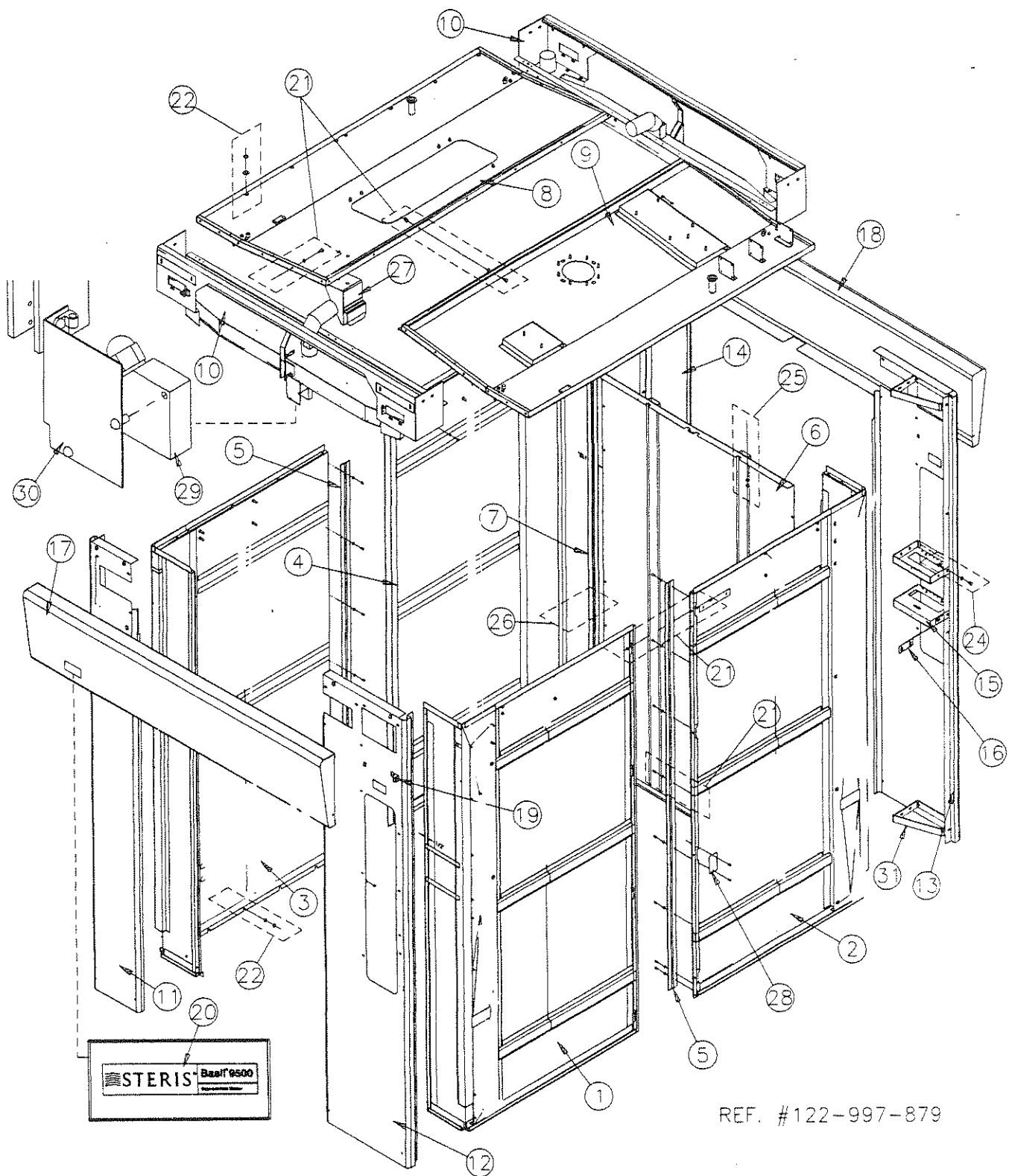
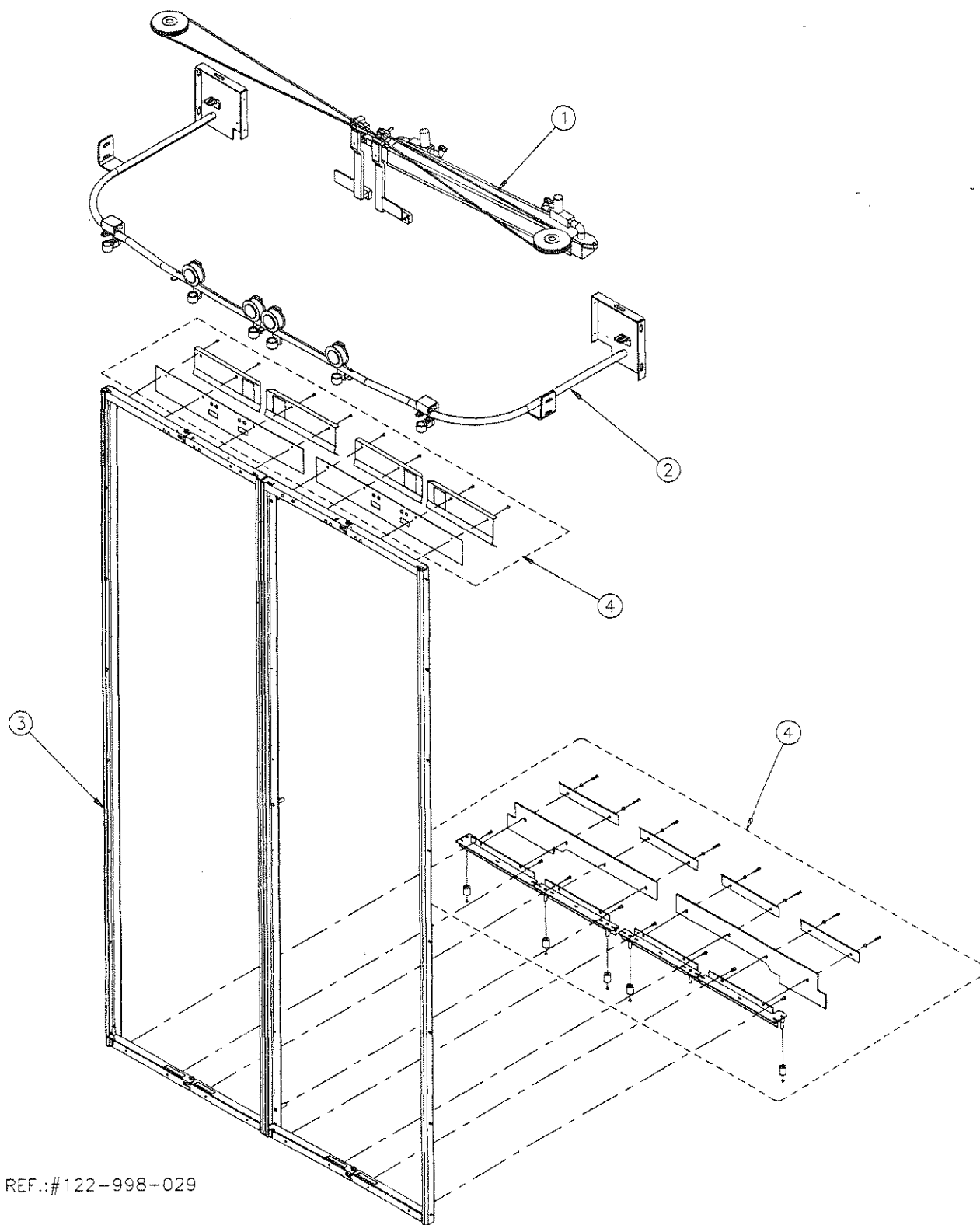


Figure 9-5. Cabinet Assembly

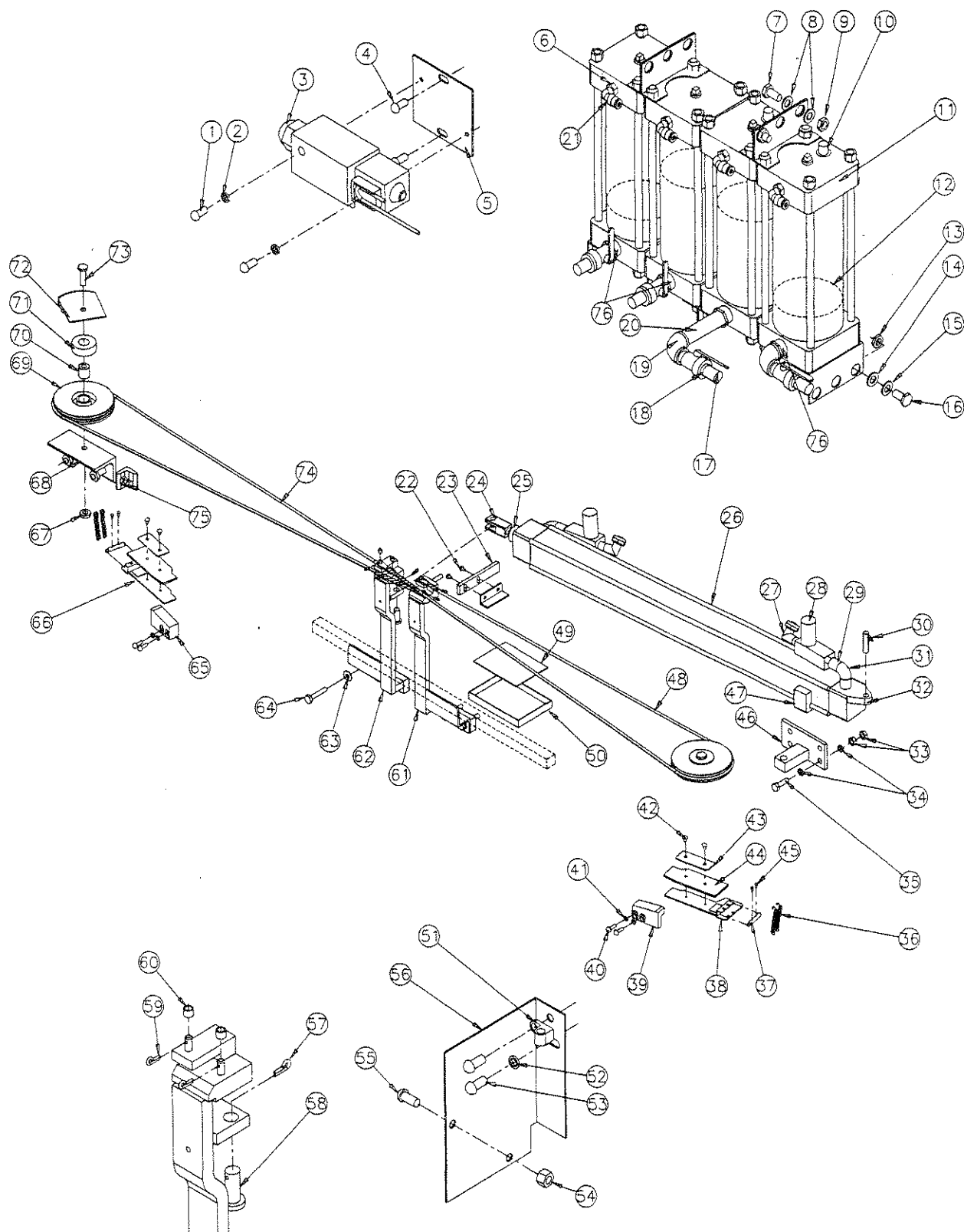
FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-5			CABINET ASS'Y				
			Single Door	X			
			Double Door		X		
			Manifold Coupling (Option)			X	
			PANELS				
1			Left, Corner Panel, Service Side	1	1		
2			Right, Corner Panel, Service Side	1	1		
3			Left, Corner Panel, Non-Service Side	1	1		
4			Right, Corner Panel, Non-Service Side	1	1		
5	117997	717	Baffle Central, Z Shaped (Units with S/N up to 362459900)	2	2		
6	117998	721	Panel, Single Door Configuration	1			
7	117996	319	X Deflector, Right Cabinet	1	2		
	117997	021	X Deflector, Left Cabinet (Not shown)	1	2		
8	117995	789	Roof, Non-Service Side	1	1		
9	117995	777	Roof, Service Side	1	1		
10	117995	753	Roof, End	2	2		
11	117996	764	Cabinet, Front Left, Non-Service Side	A/R	A/R		
12	117996	765	Cabinet, Front Left, Service Side	A/R	A/R		
13	117996	767	Cabinet, Front Right, Service Side	A/R	A/R		
14	117996	766	Cabinet, Front Right, Non-Service Side	A/R	A/R		
15	117996	869	Support, Cabinet Corner	2	4		
16	117996	761	Reinforcement, Support Cabinet Corner	1	3		
17	117996	893	X Panel, Removable, Left	A/R	A/R		
18	117996	895	X Panel, Removable, Right	A/R	A/R		
19	117996	760	Attachment, Removable Panel	2	4		
20	117909	296	X ID Plate, Steris Basil 9500	1	2		
21	117950	905	X Bolt, S/S, 5/16-18 x 3/4"	A/R	A/R		
	117950	977	X Washer, S/S, 5/16"	A/R	A/R		
	117950	954	X Nut, S/S, 5/16-18	A/R	A/R		
22	117950	977	X Washer, S/S, 5/16"	A/R	A/R		
	117950	987	X Washer, Lock, S/S, 5/16"	A/R	A/R		
	117950	954	X Nut, S/S, 5/16-18	A/R	A/R		
23	117950	856	X Screw, Truss Head, S/S, 8-32 x 3/8"	A/R	A/R		
	117909	999	X Washer, Lock, for Screw #8	A/R	A/R		
24	117950	900	X Bolt, S/S, 1/4-20 x 3/4"	A/R	A/R		
	117950	976	X Washer, S/S, 1/4"	A/R	A/R		
	117950	952	X Nut, S/S, 1/4-20	A/R	A/R		
25	117950	899	X Bolt, S/S, 1/4-20 x 1/2"	A/R	A/R		
	117950	952	X Nut, S/S, 1/4-20	A/R	A/R		
	117950	986	X Washer, Spring, S/S, 1/4"	A/R	A/R		
26	117950	865	X Screw, Truss Head, S/S, 10-32 x 1/4"	A/R	A/R		
	117950	985	X Washer, Lock, S/S, 3/16"	A/R	A/R		
27	117999	132	Stopper, Roof, Central Header			1	
28	117998	774	Plate, Protection Sheet (Units with S/N up to 3624599000)	4	4		
	117950	856	X Screw, Truss Head, S/S, 8-32 x 3/8"	8	8		
29	117997	307	X Sensor, Photoelectric Ass'y	1	2		
30	117989	159	Support, Photoelectric Sensor	1	2		
	117910	245	Kit, Assembling (Assembled Unit) (for reassembly) (Not shown)				
	117910	246	Kit, Assembling (Disassembled Unit) (for reassembly) (Not shown)				
31	117005	729	Support, Cabinet, Corner	2	4		



REF.:#122-998-029

Figure 9-6. Door Assembly

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-6			DOOR ASS'Y				
			Single Door Configuration	X			
			Double Door Configuration		X		
1			• Drive Mechanism Ass'y (see Figure 9-6a)	1	2		
2			• Door Guide Rails Ass'y (see Figure 9-6b)	1	2		
3			• Door Ass'y (see Figures 9-6c and 9-6d)	1	2		
4			• Bottom Guides and Top Gaskets, Door Ass'y (see Figure 9-6e)....	1	2		



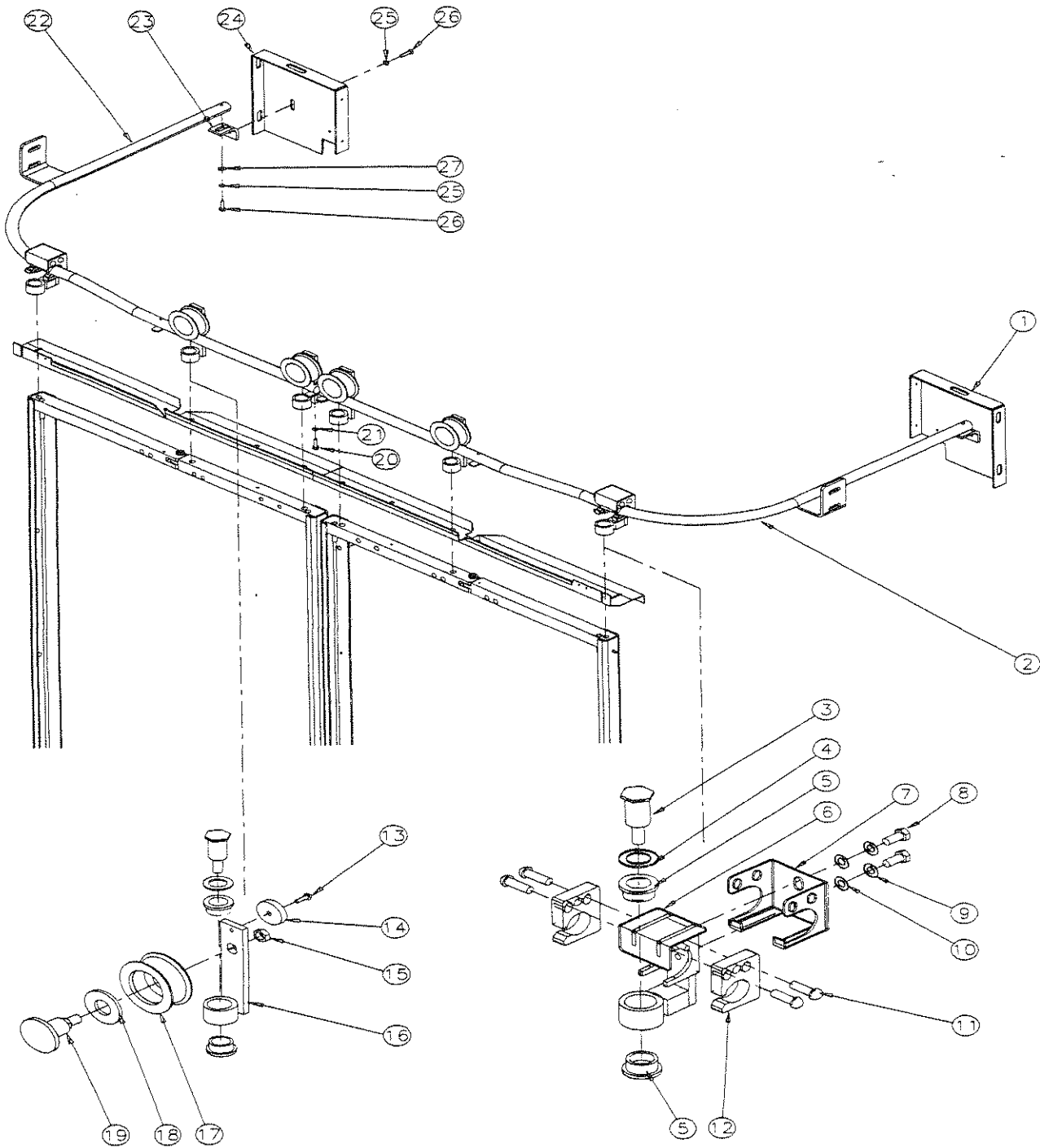
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Figure 9-6a. Drive Mechanism Assembly

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-6a			DRIVE MECHANISM ASS'Y				
			Single Door Configuration	X			
			Double Door Configuration		X		
1	117950	872	X Screw, Truss Head, S/S, 10-32 x 1-3/4"	2	4		
2	117906	017	Washer, Lock Star, Screw #10	2	4		
3	117998	340	X Switch, safety Door Close	1	2		
4	117950	865	Screw, S/S, Truss Head, 10-32 x 1/4"	2	4		
5	117003	855	X Detector, Support, Door Arm, ND	1	2		
6	117952	186	X Adapter, 1/2 NPT m x 1/4 NPT f	2	4		
7	117950	916	X Bolt, S/S, 3/8-16 x 1"	2	4		
8	117950	978	X Washer, S/S, 3/8"	4	8		
9	117950	955	X Nut, S/S, 3/8-16	2	4		
10	117954	544	X Plug, Copper, 1/2"M	2	4		
11	117909	945	X Tank, Air/Oil, 3-1/4"ø x 8"Lg	2	4		
12	117910	739	Pneumatic Oil	A/R	A/R		
13	117950	955	X Nut, S/S, 3/8-16	4	8		
14	117950	978	X Washer, Flat, S/S, 3/8	4	8		
15	117950	988	X Washer, Lock, S/S, 3/8"	4	8		
16	117950	916	X Bolt, S/S, 3/8-16 x 1"	4	8		
17	117910	760	X Fitting, Pressure, 3/8"M x 1/2"OD	2	4		
18	117940	027	X Ball, Valve, 1/2" NPT	2	4		
19	117952	105	Elbow, 1/2NPT f x 1/2NPT f	2	4		
20	117952	051	Nipple, Brass, 1/2", Closed	1	1		
21	117955	269	X Elbow, 1/4" NPT m x 1/4"OD	2	4		
22	117950	856	X Screw, Truss Head, S/S, 8-32 x 3/8"	2	4		
23	117998	053	X Support, Plastic, Door Cylinder	1	2		
24	117997	001	X Clevis, S/S, Cylinder	1	2		
25	117950	968	X Nut, S/S, Jam Nut 1/2-20	1	2		
26	117909	443	X Cylinder, Pneumatic, Magnet, 24.5"	1	2		
27	117005	115	X Elbow, Compression, Brass, 3/8"M x 1/2"OD	2	4		
28	117909	934	X Valve, Flow Control, 3/8"F x 3/8"F	2	4		
29	117952	040	Nipple, Brass, 3/8" Closed	2	4		
30	117909	883	X Hitch Pin, S/S, 1/2" x 2" Lg	1	2		
31	117952	099	Elbow, 90°, Copper, 3/8"M x 3/8"F	2	4		
32	117909	719	X Pivot, Bracket, Cylinder 1-1/2"	1	2		
33	117950	954	X Nut, S/S, 5/16-18	8	6		
34	117950	977	X Washer, S/S, 5/16"	4	8		
35	117950	906	X Bolt, S/S, 5/16-18 x 1"	4	8		
36	117904	209	X Spring, Shelf Latch	4	8		
37	117003	850	X Pivot, Seal trap, Roof End, ND	2	4		
38	117003	852	X Seal Trap, Right, Roof End, ND	1	2		
39	117003	808	X Block, Adjustment, Right Seal Trap	1	2		
40	117950	858	X Screw, S/S, Truss Head, 8-32 x 3/4	4	8		
41	117906	017	X Washer, Lock, Star, Screw #10	4	8		
42	117950	855	X Screw, S/S, Truss Head, 8-32 x 1/4"	4	8		
43	117003	567	X Gasket Holder, Seal trap, Roof End, ND	2	4		
44	117003	565	X Gasket, Seal Trap, Roof End, ND	2	4		
45	117950	849	X Screw S/S, Truss Head, 6-32 x 1/4"	4	8		
46	117997	381	X Support, Base, Door Cylinder	1	2		
47	117998	338	X Sensor, automatic Door Ass'y	1	2		
48	117997	519	X Cable, Flexible, Door	1	2		
49	117910	315	X Wick, Pan, Oil, Drip, Door Cylinder	1	2		
50	117998	093	X Pan, Oil, Drip, Door Cylinder	1	2		
51	117942	160	X Clamp, Cable, 1/4"	1	2		
52	117906	017	Washer, Lock, Star, Screw #10	1	2		
53	117950	866	X Screw, Truss Head, S/S, 10-32 x 3/8"	2	4		
54	117950	949	Nut, S/S, 6-32	2	4		
55	117910	565	X Screw, S/S, 6-32 x 1-1/4"	2	4		

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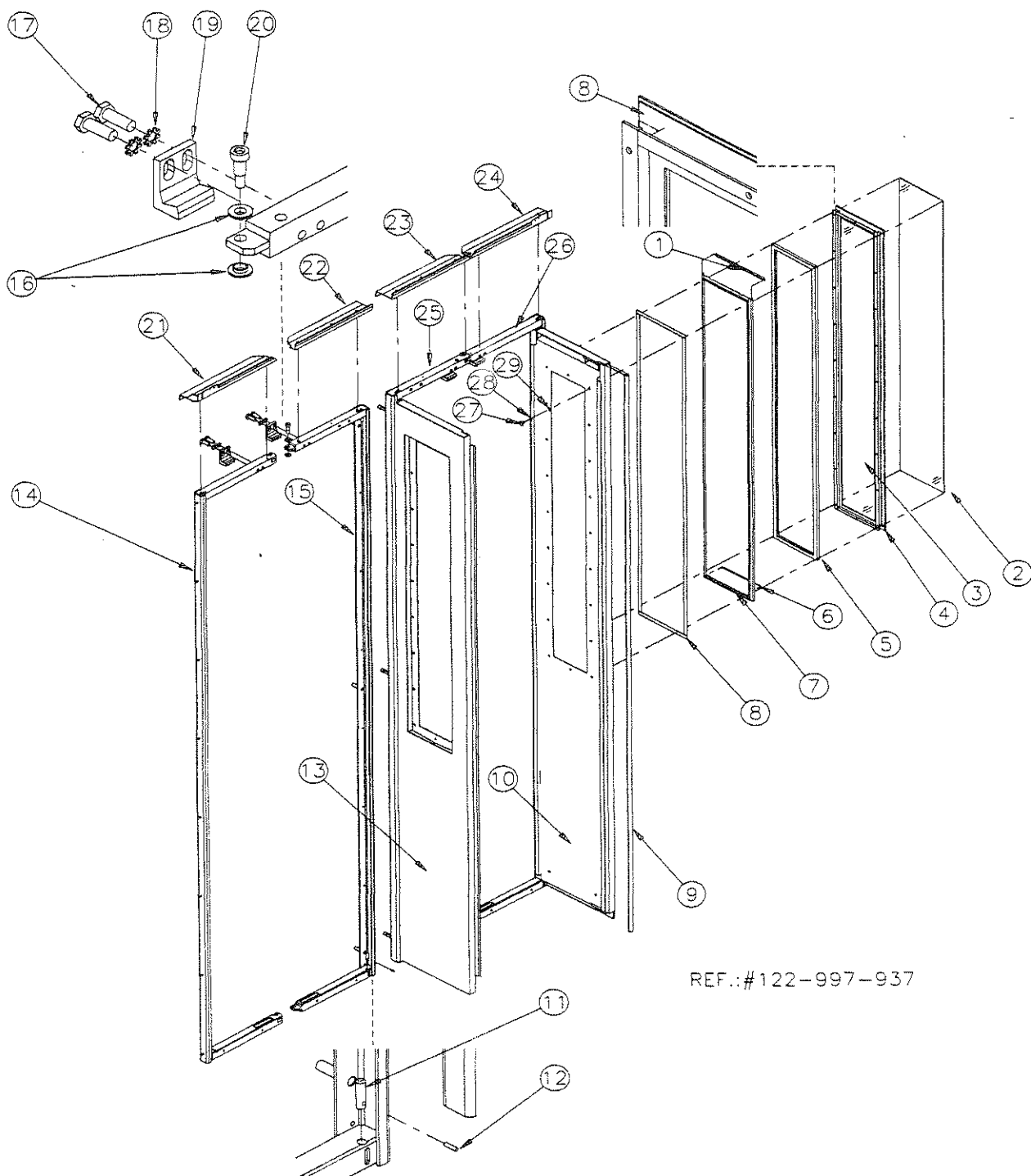
FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-6a			DRIVE MECHANISM ASS'Y Single Door Configuration Double Door Configuration	X		X	
56	117989	159 X	Support, Detector, Automatic and Safety Door Open	1	2		
57	117957	215 X	Pin, Cotter, S/S	1	2		
58	117909	888 X	Pin, Clevis, S/S, 3/8" x 27/32"	1	2		
59	117951	016 X	Pin, Cotter, S/S, 1/16 x 1/2"	4	8		
60	117003	867 X	Bushing for Door Cable	4	8		
61	117003	848 X	Arm, Right Door Cylinder	1	2		
62	117003	846 X	Arm, Left Door Cylinder	1	2		
63	117950	988 X	Washer, Lock, S/S, 3/8"	4	8		
64	117957	207 X	Bolt, Hex. Head, 3/8-16 x 1-1/4"Lg	4	8		
65	117003	807 X	Block, Adjustment, Left Seal Trap	1	2		
66	117003	851 X	Seal Trap, Left, Roof End, ND	1	2		
67	117910	374 X	Nut, Self-Locking, S/S, 3/8-16	4	8		
68	117997	397 X	Support, Door Pulley	2	4		
69	117998	010 X	Pulley	2	4		
70	117997	326 X	Bushing, Pulley	2	4		
71	117909	926 X	Bearing, Ball, .625"ID x 1.625"OD x 7/16"L	2	4		
72	117997	327 X	Guard, Pulley	2	4		
73	117957	208 X	Bolt, Hex. Head, 3/8-16 x 1-1/2"Lg	2	4		
74	117003	598 X	Cable	1	2		
75	117950	901 X	Bolt, Hex Head, 1/4-20 x 1 Lg	2	4		
76	117952	051	Nipple, Brass, 1/2", Close	1	3		
77	117910	737 X	Hose, Air, Translucent, 1/2"	2	4		



REF.:#122-999-951

Figure 9-6b. Door Guide Rails Assembly

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-6b			DOOR GUIDE RAILS ASS'Y				
			Single Door Configuration	X			
			Double Door Configuration		X		
1	117989	151	X Support, Tubing, Right Door	1	2		
2	117997	518	X Guide Rails, Right Door	1	2		
3	117003	816	Pivot, Door	6	12		
4	117996	785	X Spacer, Washer, Arm Pivoting	6	12		
5	117989	164	Bushing, Arm Pivoting	12	24		
6	117005	839	Door Pivot, Outside Corner	2	4		
7	117005	838	Cover, Door Pivot, Outside Corner	2	4		
8	117950	899	Bolt, S/S, 1/4-20 x 1/2"	4	8		
9	117950	986	Washer, Spring, S/S, 1/4"	4	8		
10	117950	976	Washer, S/S 1/4"	4	8		
11	117950	868	Screw, S/S, Truss Head, 10-32 x 3/4"	8	16		
12	117005	836	Door Sliding, Outside Corner	4	8		
13	117950	867	Screw, S/S, Truss Head, 10-32 x 1/2"	4	8		
14	117003	841	Stopper, Roller	4	8		
15	117910	374	Nut, Self-Locking, S/S 3/8-16, Fujilock	6	12		
16	117003	824	Arm, Pivoting, Door Roller	4	8		
17	117989	165	X Roller, Door	4	8		
18	117005	192	Spacer, Door Roller	4	8		
19	117003	811	X Pivot, Door Roller	6	12		
20	117950	900	Bolt, S/S, 1/4-20 x 3/4"	4	8		
21	117950	986	Washer, Lock, S/S, 1/4"	4	8		
22	117989	154	X Guide Rails, Left Door	1	2		
23	117989	150	X Support, Angle, Guide Rails	2	4		
24	117989	198	X Support, Tubing, Left Door	1	2		
25	117950	986	X Washer, Spring, S/S, 1/4"	4	8		
26	117950	900	X Bolt, S/S, 1/4-20 x 3/4"	4	8		
27	117950	976	X Washer, S/S, 1/4"	4	8		



REF.:#122-997-937

Figure 9-6c. Door Assembly (Part 1 of 2)

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-6c			DOOR ASS'Y				
			Single Door Configuration	X			
			Double Door Configuration		X		
1	117003	275 X	Fixture, Outside Glass, Door	4	8		
2	117998	762 X	Glass, Outside, 3mm, Door	4	8		
3	117910	230 X	Glass, 6mm, Inside Door	4	8		
4	117997	370 X	Frame, Window, Door	4	8		
5	117910	229 X	Gasket, Window	4	8		
6	117998	674	Spacer, EPDM, for 3mm Glass, Door	4	8		
7	117003	270 X	Holder, Outside glass	4	8		
8	117910	185	Silicon, Grey, 1/32" x 1/2" with adhesive	4	8		
9	117003	587 X	Gasket, EPDM, # ec 12-050-EMT*	A/R	A/R		
10	117003	827	Door, Right, ND	2	4		
11	117003	294 X	Pivot, Bottom, Frame "C"	4	8		
12	117957	213	Screw, S/S, Hex Head, 10-32 x 1/2"	4	8		
13	117003	831	Door, Left, ND	2	4		
14	117003	295 X	Left, "C" Frame, for Left side	1	2		
15	117003	297 X	Right, "C" Frame, Left Side	1	2		
16	117003	896 X	Bushing, Pivot, "C" Frame	8	16		
17	117950	915	Bolt, 3/8-16 x 3/4"	8	16		
18	117906	020	Washer, Lock, Dented, 3/8"	8	16		
19	117003	812 X	Lock, Up, Frame Door	4	8		
20	117003	800 X	Bolt, Shoulder, S/S, 5/16-18 x 3/8" x 1/2"	4	8		
21	117003	873 X	Deflector, Up, Left Outside, "C" Frame	1	2		
22	117003	875 X	Deflector, Center, Up, Left, "C" Frame	1	2		
23	117003	874 X	Deflector, Center, Up, Right, "C" Frame	1	2		
24	117003	872 X	Deflector, Up, Right Outside, "C" Frame	1	2		
25	117003	296 X	Left "C" Frame, Right Side	1	2		
26	117003	298 X	Right "C" Frame, Right Side	1	2		
27	117950	895	Bolt, S/S, 10-32 x 1/2"	80	160		
28	117950	975	Washer, S/S, 3/16"	80	160		
29	117910	027	Washer, Teflon, 7/16"OD x 13/64"ID x 1/32"	80	160		

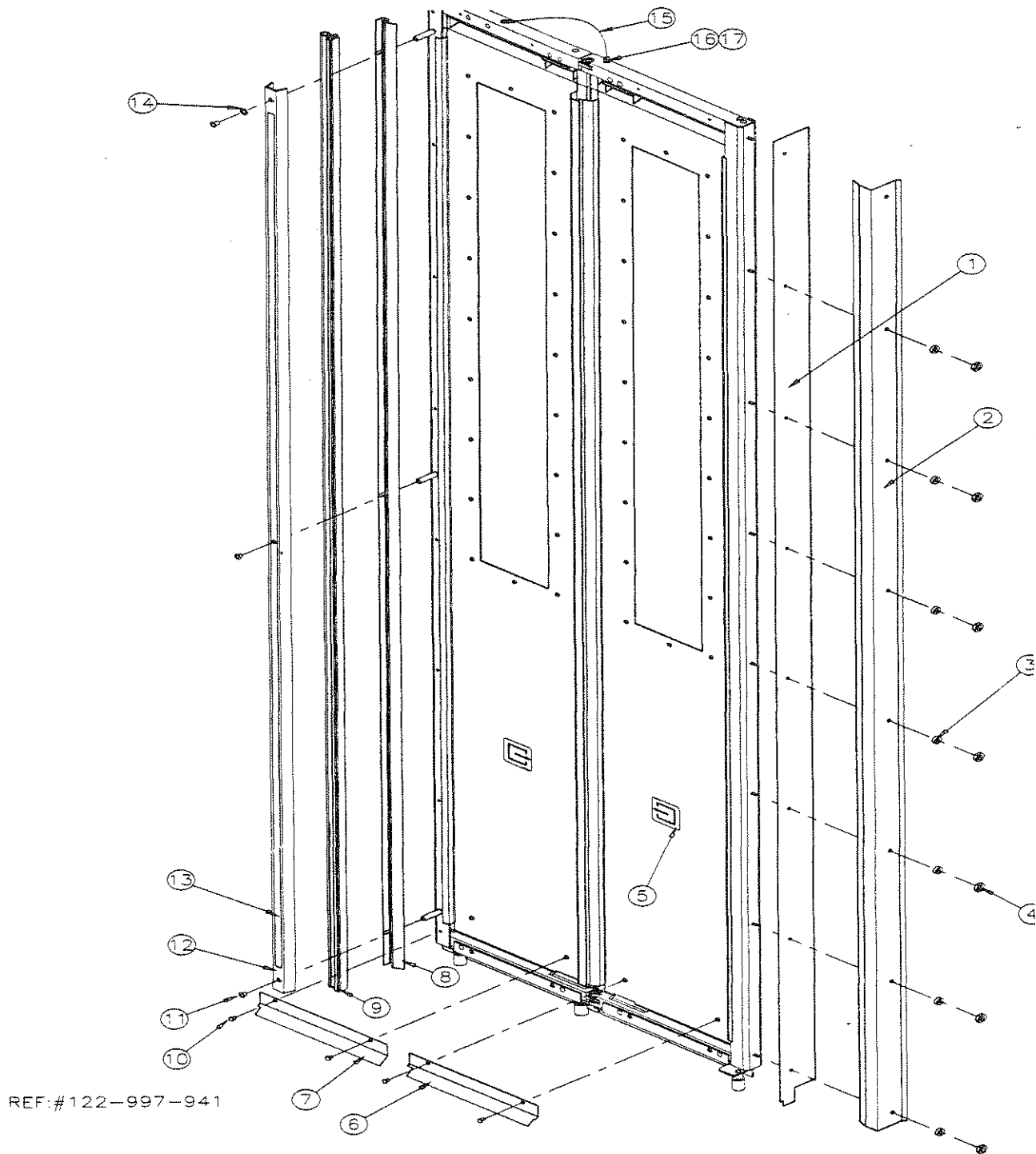


Figure 9-6d. Door Assembly (Part 2 of 2)

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-6d			DOOR ASS'Y Single Door Configuration Double Door Configuration	X		X	
1	117003	573	X Gasket, Door Side	2	4		
2	117003	893	X Gasket, Door Side	2	4		
3	117950	975	Washer, S/S, 3/16"	14	28		
4	117957	200	Nut, Cap, S/S, 8-32	14	28		
5	117997	023	X Sticker, Emergency Exit, Door	4	8		
6	117003	574	X Deflector, Bottom, Left door	2	4		
7	117003	575	X Deflector, Bottom, Right Door	2	4		
8	117997	374	X Deflector, Central Door Frame	2	4		
9	117909	513	X Gasket Door Sides and Middle	A/R	A/R		
10	117950	855	Screw, S/S, Truss Head, 8-32 x 1/4"	8	16		
11	117950	865	Screw, S/S, Truss Head, 10-32 x 1/4"	6	12		
12	117997	372	X Deflector, Bumper, Central, Door, Frame	2	4		
13	117909	950	X Sticker, Floor and Door	4	8		
14	117906	017	Washer, Lock, Star, for Screw #10	2	4		
15	117998	383	Bounding, S/S, 8-1/2"	4	4		
16	117906	017	Washer, Lock, Star, for Screw # 10	8	8		
17	117950	866	Screw, S/S, Truss Head, 10-32 x 3/8"	8	8		

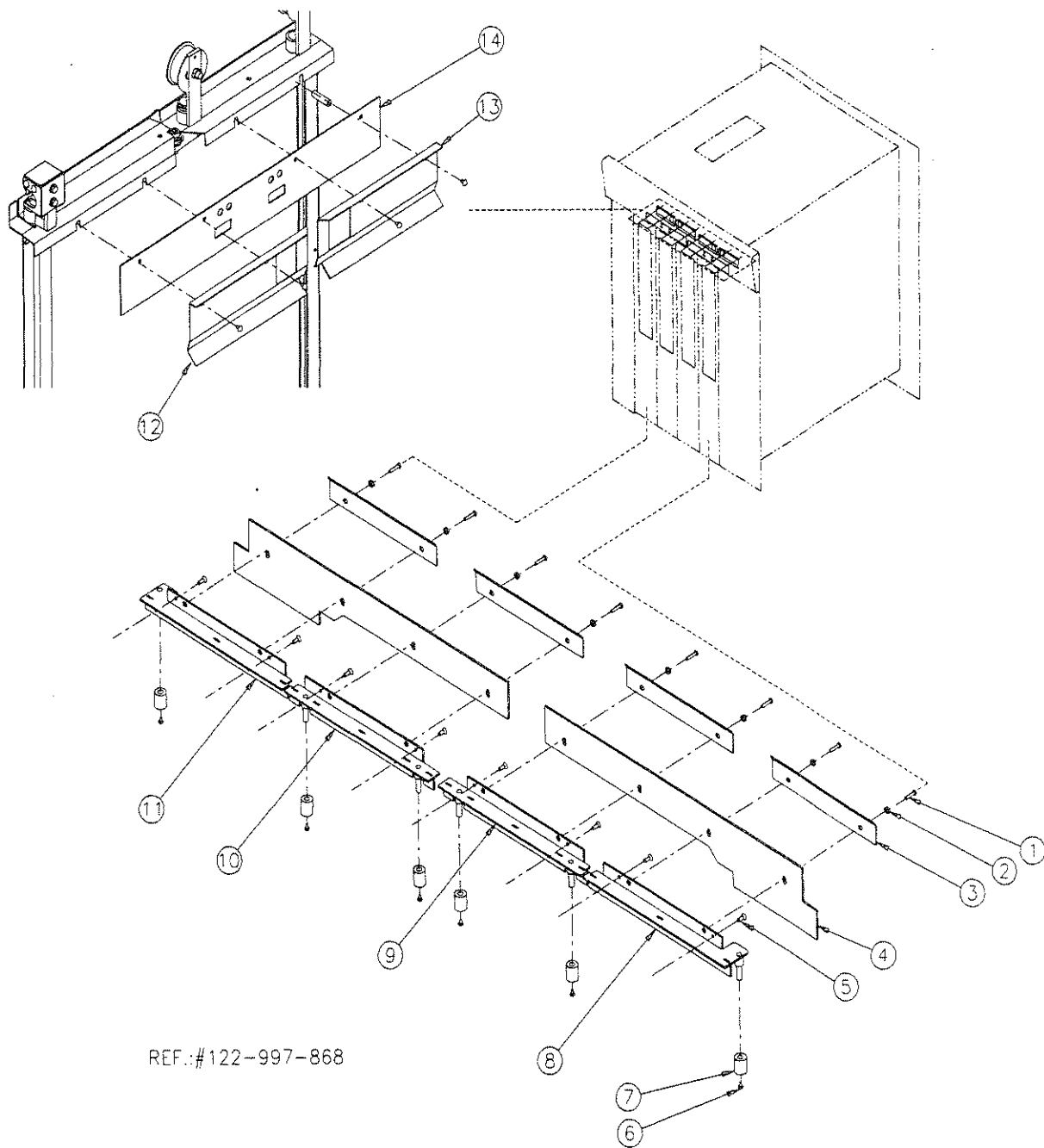


Figure 9-6e. Guide, Bottom and Top Gasket Door Assembly

FIG. & ITEM NO.	PART NUMBER		S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-6e 9-6f				GUIDE, BOTTOM AND TOP GASKET DOOR ASS'Y Single Door Configuration Double Door Configuration	X		X	
1	117950	900	X	Bolt, S/S, 1/4-20 x 1"	8	16		
2	117950	976		Washer, S/S, 1/4	8	16		
3	117003	818	X	Support, Bottom Door Gasket	4	8		
4	117003	528	X	Gasket, Bottom Door	2	4		
5	117950	834		Screw, S/S, Flat Head, 10-32 x 134	8	16		
6	117950	865	X	Screw, Truss Head, S/S, 10-32 x 3/4"	6	12		
7	117003	577	X	Roller, Guide, Door Bottom	6	12		
8	117003	583	X	Support, Roller, Bottom Right Door, Right Frame	1	2		
9	117003	585	X	Support, Roller, Bottom Left Door, Right Frame	1	2		
10	117003	581	X	Support, Roller, Bottom Right Door, Left Frame	1	2		
11	117003	579	X	Support, Roller, Bottom Left Door, Left Frame	1	2		
12	117003	817	X	Deflector, Up, Frame "C", Left Door	2	4		
13	117003	815	X	Deflector, Center, Up, Frame "C", Right Door	2	4		
14	117003	532	X	Gasket, Up, Door, Frame "C"	2	4		

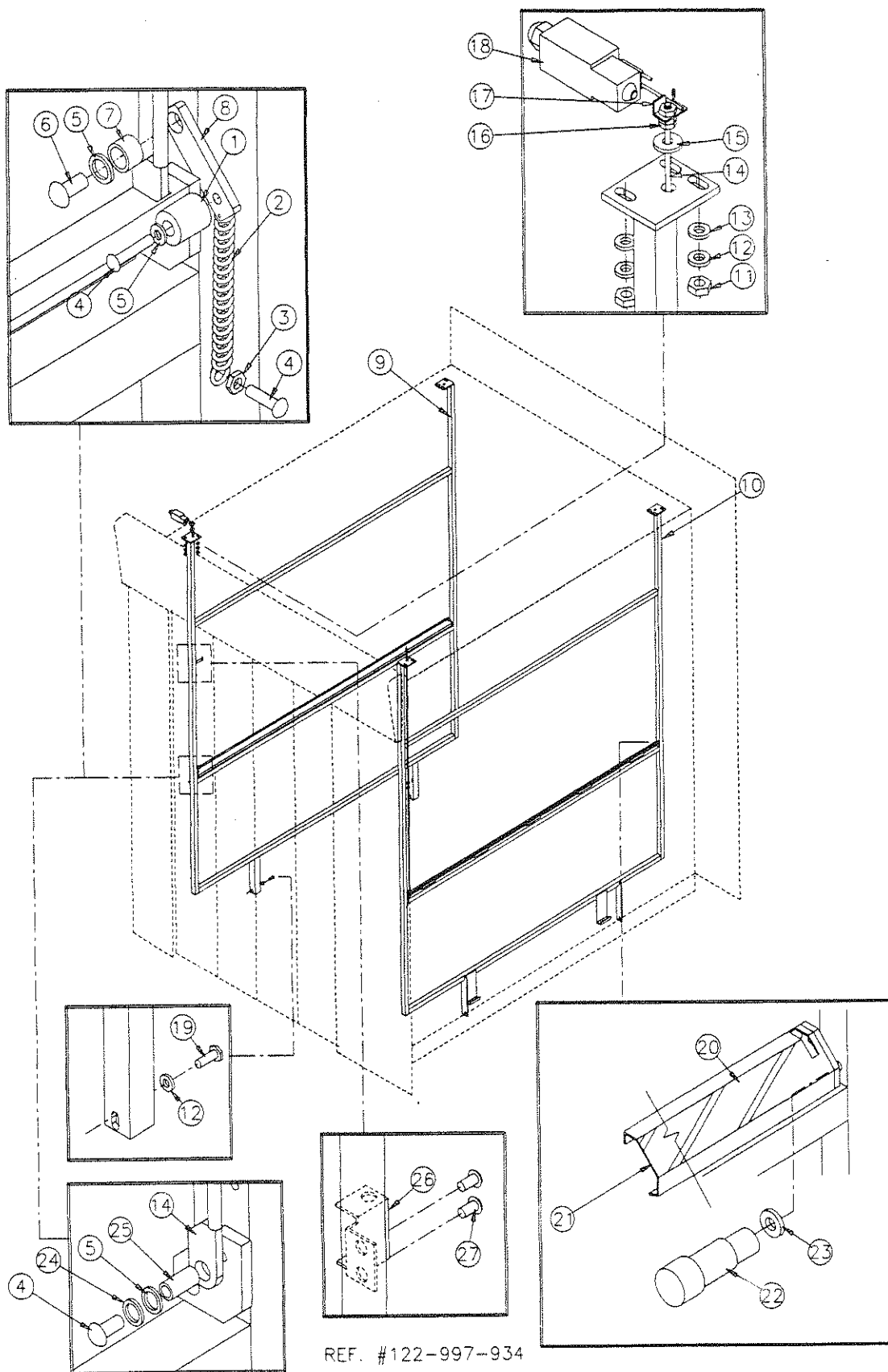


Figure 9-7. Safety Guard Rails

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY
9-7			SAFETY GUARD RAILS	X
1	117996	748 X	Roller, Handle Lever	2
2	117904	209 X	Spring, Shelf Latch	2
3	117950	950 X	Nut, S/S, 8-32	2
4	117950	858 X	Screw, Truss Head, S/S, 8-32 x 3/4"	6
5	117909	999 X	Washer, Lock, for Screw #8	6
6	117950	857 X	Screw, Truss Head, S/S, 8-32 x 1/2"	2
7	117996	389 X	Spacer, Handle Retaining	2
8	117996	351 X	Lever, Handle Retaining	2
9	117995	756	Guard, Non-Service Side	1
10	117995	755	Guard, Service Side	1
11	117950	954 X	Nut, S/S, 5/16-18	12
12	117950	987 X	Washer, Lock, S/S, 5/16"	16
13	117950	977 X	Washer, S/S, 5/16"	12
14	117996	892 X	Rod, Connecting, Handle	2
15	117996	883 X	Gasket, Connecting Rod	2
16	117950	951 X	Nut, S/S, 10-32	6
17	117996	324 X	Actuator, Connecting Rod, Safety Handle	2
18	117997	306 X	Switch, Limit, Ass'y	2
19	117950	906 X	Bolt, S/S, 5/16-18 x 1"	4
20	117998	019 X	Sticker, Safety Handle	2
21	117996	876 X	Handle, Safety	2
22	117943	194 X	Bolt, Shoulder, S/S, 1/4-20 x 5/16" x 1/2"	4
23	117904	921 X	Washer, Internal Tooth Lock, S/S, 1/4"	4
24	117950	975 X	Washer, S/S, 3/16"	2
25	117996	880 X	Spacer, Safety Handle	2
26	117996	882 X	Guide, Safety Rod	2
27	117950	855	Screw, S/S, Truss Head, 8 x32 x 1/4"	4

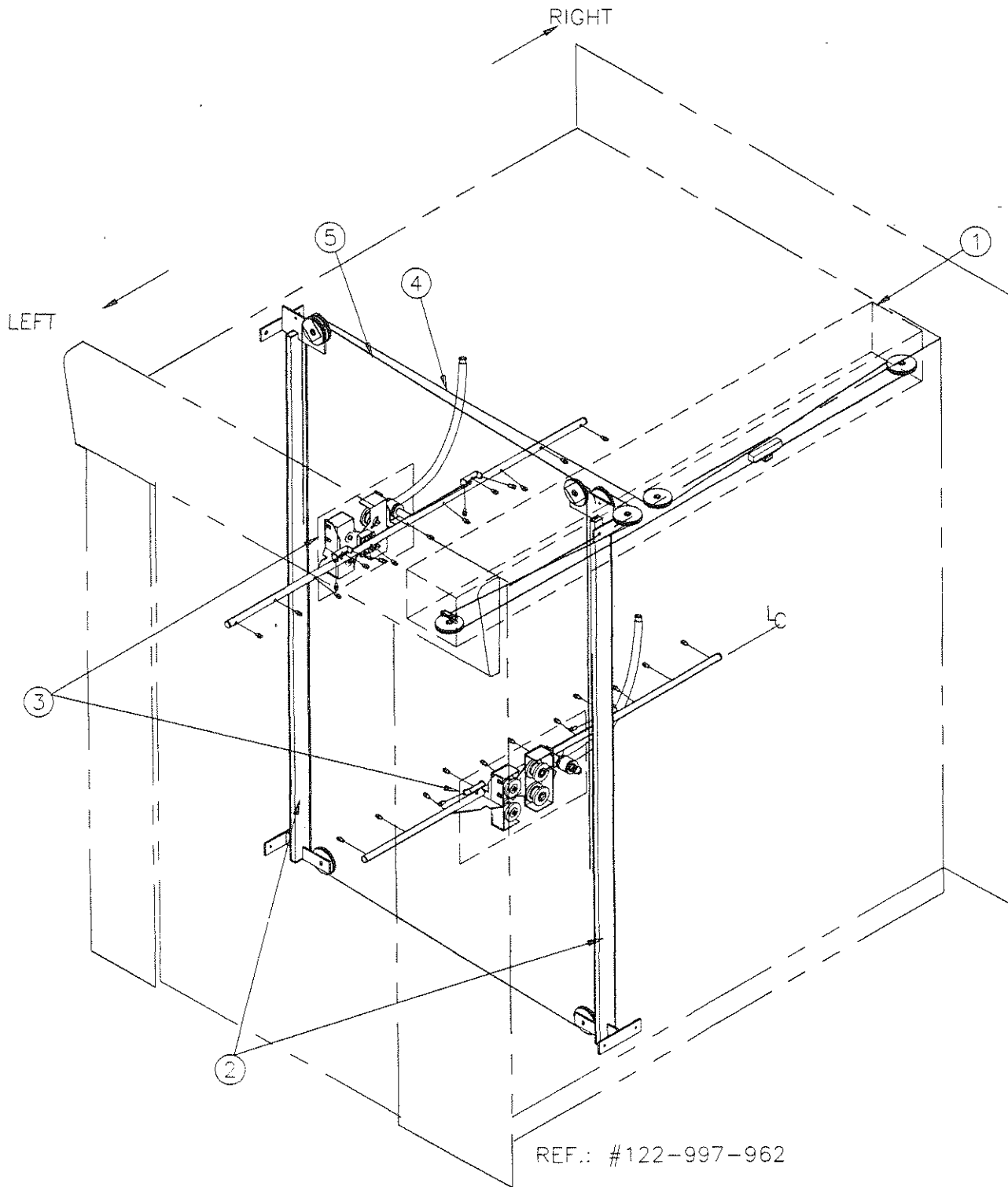
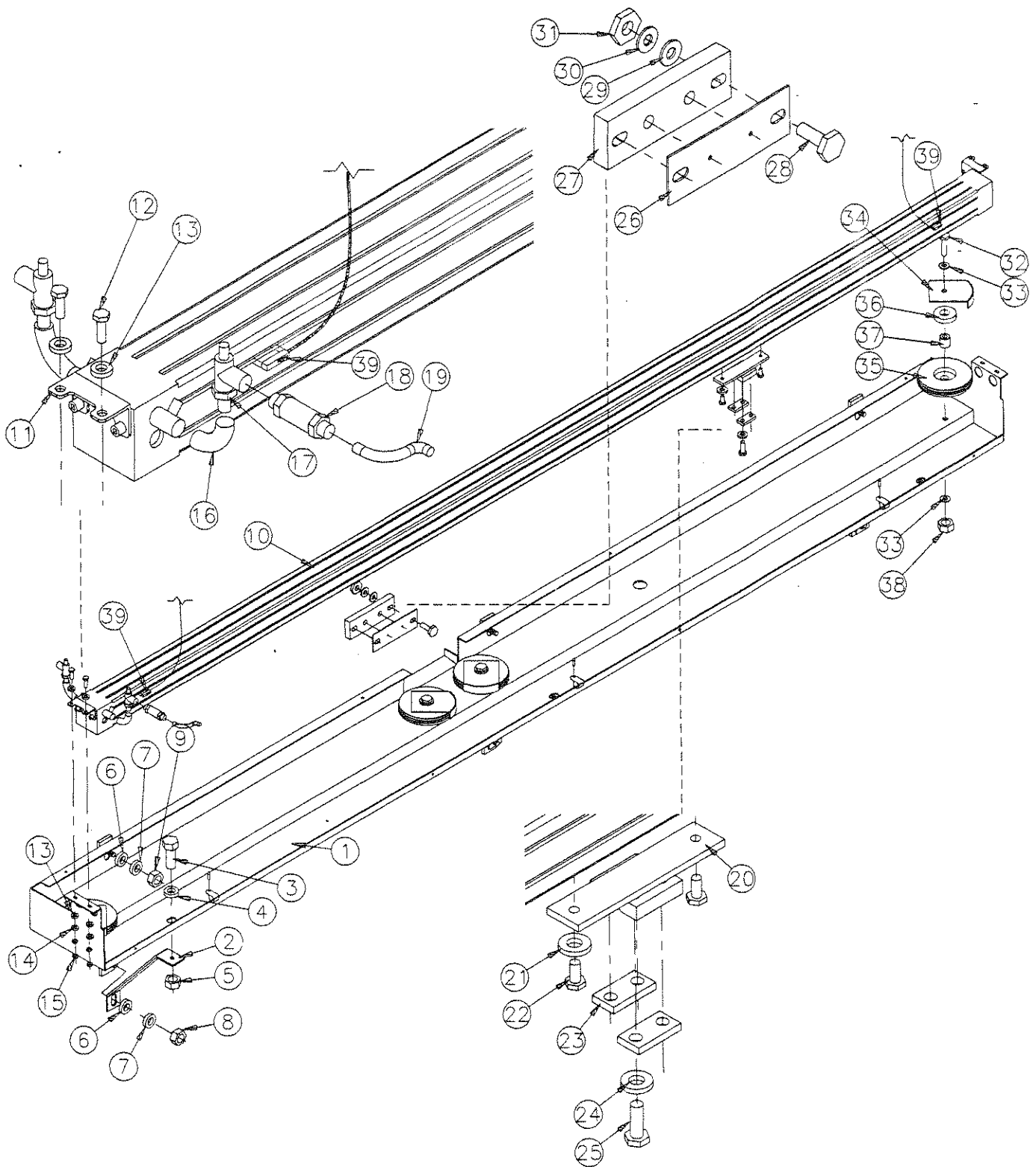


Figure 9-8. Spray Headers and Traveler System Assembly

FIG. & ITEM NO.	PART NUMBER		S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-8				SPRAY HEADERS AND TRAVELER SYSTEM ASS'Y				
1				Traveler Mechanism (see Figure 9-8a)				
2				Traveler Guide Rail Mechanism (see Figure 9-8b)				
3				Spray Header Mechanism (see Figure 9-8c)				
4	117999	314		Cable, Driven, S/S, 3/32" x 506", Spray Header	1			
5	117999	315		Cable, Safety, S/S, 3/32" x 157.5"	1			



REF.: #122-997-975

Figure 9-8a. Traveler Mechanism Assembly

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY
9-8a			TRAVELER MECHANISM ASS'Y	X
1	117997	380	Support, Pulley & Cylinder	1
2	117997	361	Reinforcement, Cylinder Support	3
3	117957	207 X	Bolt, S/S, 3/8-16 x 1-1/4"	3
4	117950	978 X	Washer, S/S, 3/8"	3
5	117950	955 X	Nut, S/S, 3/8-16	3
6	117950	978 X	Washer, S/S, 3/8"	3
7	117950	988 X	Washer, Lock, S/S, 3/8"	3
8	117950	955 X	Nut, S/S, 3/8-16	3
9	117950	955 X	Nut, S/S, 3/8-16	3
10	117909	707 X	Cylinder, Pneumatic	1
11	117908	764 X	Support, Cylinder, 32mm	2
12	117950	895 X	Bolt, S/S, 10-32 x 1/2"	4
13	117950	975 X	Washer, S/S, 3/16"	4
14	117950	985 X	Washer, Lock, S/S, 3/16"	4
15	117950	951 X	Nut, S/S, 10-32	4
16	117909	958 X	Elbow, S/S, 90°, 1/8"F x 1/8"M	2
17	117902	318 X	Valve, Micrometric, 1/8"M x 1/4"OD	2
18	117910	156 X	Fitting, Pneumatic, 1/4"FIT x 3/8"OD	2
19	117955	229 X	Tubing, Blue, 1/4"OD	A/R
	117955	228 X	Tubing, Red, 1/4"OD	A/R
20	117997	363 X	Attachment, Cable, Traveler System	1
21	117950	985 X	Washer, Lock, S/S, 3/16"	2
22	117950	896 X	Bolt, S/S, 10-32 x 3/4"	2
23	117997	362 X	Attachment, Plate Cable	2
24	117950	986 X	Washer, Spring, S/S, 1/4"	4
25	117950	899 X	Bolt, S/S, 1/4-20 x 1/2"	4
26	117997	330 X	Gasket, Cable Guide	1
27	117997	335 X	Guide, Cable	1
28	117950	900 X	Bolt, S/S, 1/4-20 x 3/4"	2
29	117950	976 X	Washer, S/S, 1/4"	2
30	117950	986 X	Washer, Spring, S/S, 1/4"	2
31	117950	952 X	Nut, S/S, 1/4-20	2
32	117957	207 X	Bolt, S/S, 3/8-16 x 1 1/4"	4
33	117950	978 X	Washer, S/S, 3/8"	4
34	117997	327 X	Guard, Pulley	4
35	117998	010 X	Pulley	4
36	117909	926 X	Bearing, Ball, .625"ID x 1.625"OD x 7/16"L	4
37	117997	326 X	Bushing, Pulley	4
38	117910	374 X	Nut, Self-Locking, S/S, 3/8-16	4
39	117998	339 X	Sensor, Traveler Ass'y	2

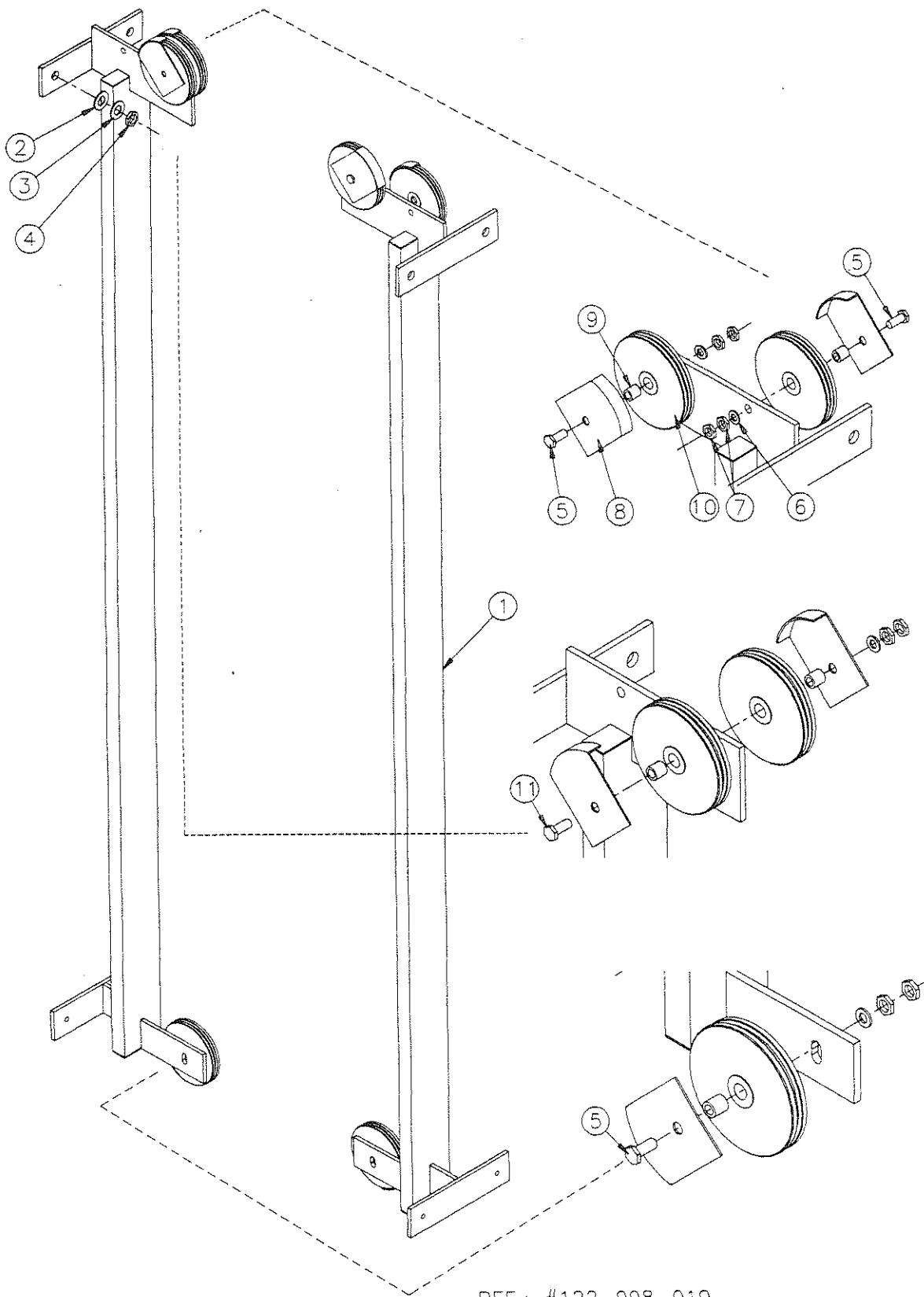
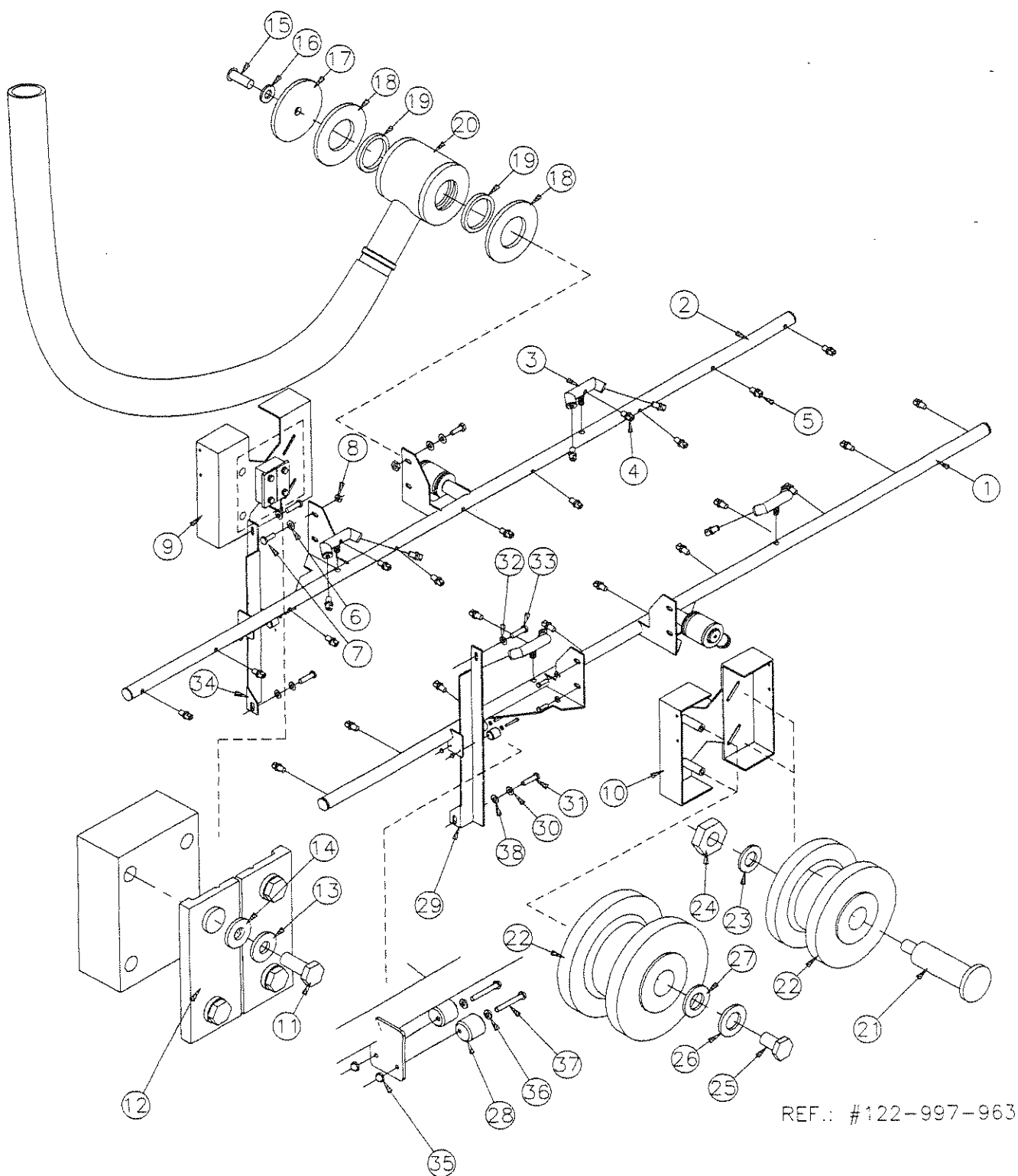


Figure 9-8b. Traveler Guide Rail Mechanism

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY
9-8b			TRAVELER GUIDE RAIL MECHANISM	
1	117999	165	Guide, Sliding Spray Header	2
2	117950	978 X	Washer, S/S, 3/8"	8
3	117950	988 X	Washer, Lock, S/S, 3/8"	8
4	117950	955 X	Nut, S/S, 3/8-16	8
5	117950	908 X	Bolt, S/S, 5/16-18 x 1-1/2"	4
6	117950	977 X	Washer, S/S, 5/16"	4
7	117950	954 X	Nut, S/S, 5/16-18	10
8	117997	327 X	Guard, Pulley	6
9	117997	326 X	Bushing, Pulley	6
10	117997	325 X	Pulley	6
11	117950	912 X	Bolt, S/S, 5/16-18 x 2-1/2"	1
	117999	314 X	Cable, Driver, S/S, 3/32" x 506" (not shown)	1
	117999	315 X	Cable, Safety, S/S, 3/32" x 157.5" (not shown)	1



REF.: #122-997-963

Figure 9-8c. Spray Header Mechanism Assembly

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY
9-8c			SPRAY HEADER MECHANISM ASS'Y	
1	117995	749 X	Spray Header, Service Side	1
2	117997	338 X	Spray Header, Non-Service Side	1
3	117998	732 X	Three Jet Nozzle	4
4	117909	774 X	Spray Jet, S/S, 1/8"NPT	4
5	117909	578 X	Spray Jet, S/S, 1/8"NPT	26
6	117950	976 X	Washer, S/S, 1/4"	8
7	117950	900 X	Bolt, S/S, 1/4-20 x 3/4"Lg	8
8	117950	952 X	Nut, S/S, 1/4-20	8
9	117998	314 X	Support, Sliding, Non-Service Side	1
10	117996	885 X	Support, Sliding, Service Side	1
11	117950	915	Bolt, Hex. Head, S/S, 3/8-16 x 3/4"	8
12	117996	846 X	Plate, Cable	4
13	117950	978 X	Washer, S/S, 3/8"	8
14	117950	988 X	Washer, Lock, S/S, 3/8"	8
15	117950	899 X	Bolt, S/S, 1/4-20 x 1/2"	2
16	117950	986 X	Washer, Spring, S/S, 1/4"	2
17	117995	746 X	Washer, Spray Arm Water Inlet	2
18	117910	727 X	Bushing, for Spray Header	4
19	117910	799 X	O'Ring, 1-1/4"OD x 1"ID	4
20	117997	081 X	Hose, Rotative Coupling, Ass'y, Spray Header	2
21	117998	316 X	Axis, Adjust Wheel	4
22	117998	317 X	Wheel, Sliding Support	8
23	117952	803	Washer, S/S, 7/16"	4
24	117910	373 X	Nut, Self-Locking, S/S, 7/16-20	4
25	117950	915	Bolt, 3/8-16 x 3/4"	4
26	117950	988	Washer, Lock, S/S, 3/8"	4
27	117950	978	Washer, S/S, 3/8"	4
28	117910	807 X	Wheel for Spray Arm Guide	4
29	117003	695	Guide, Spray Arm, Serv. Side	1
30	117950	987	Washer, Lock, S/S, 5/16"	2
31	117957	204	Bolt, S/S 5/16-18 x 1/2"	2
32	117950	985	Washer, Lock, S/S, 3/16"	2
33	117950	866	Screw, S/S, Truss Head, 10-32 x 3/8	2
34	117003	698	Guide, Spray Arm, N/Serv. side	1
35	117957	194	Nut, Cap, # 10-32	4
36	117950	975	Washer, S/S, 3/16"	4
37	117950	897	Bolt, S/S, 10-32 x 1"	4
38	117950	977	Washer, S/S, 5/16"	2

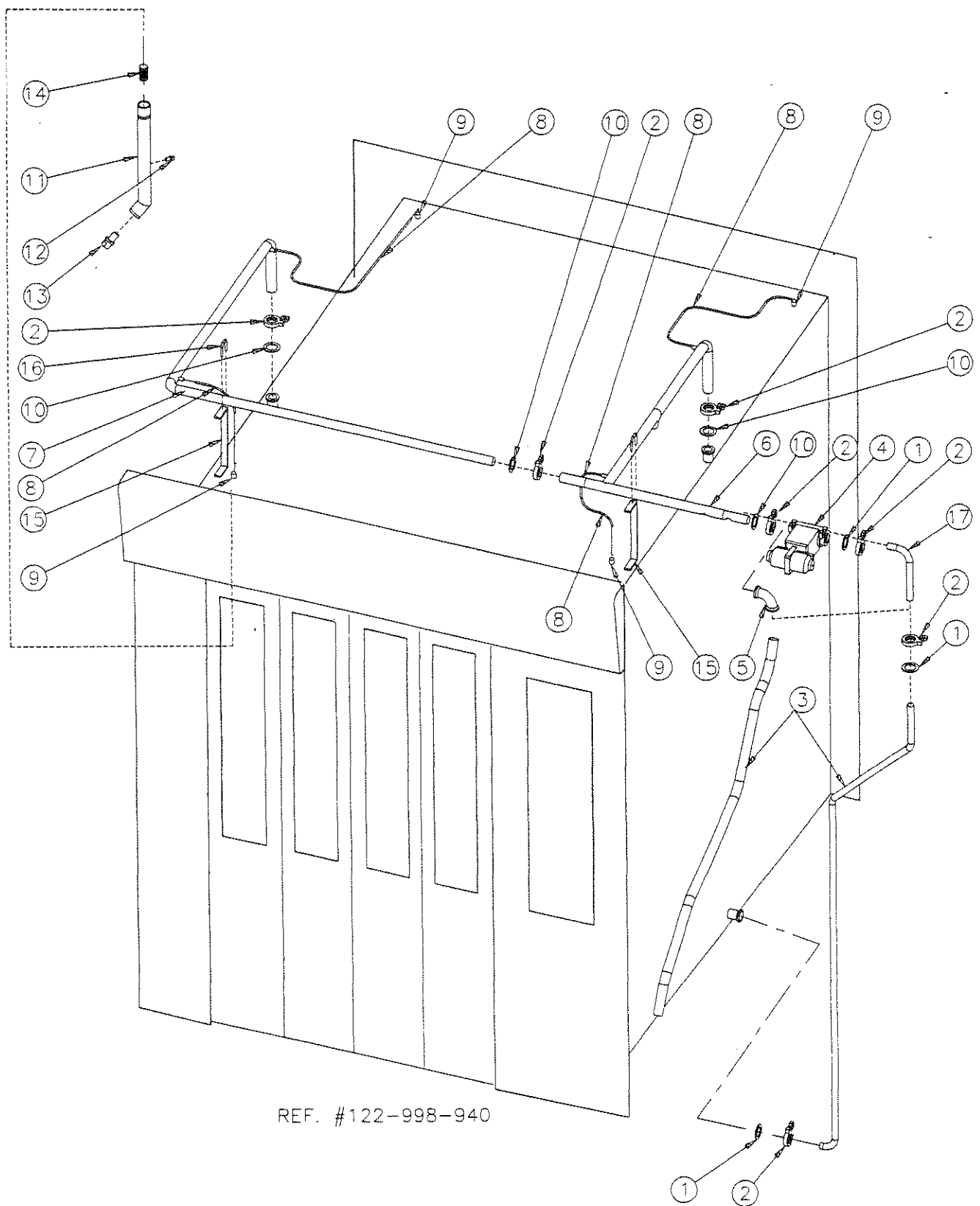
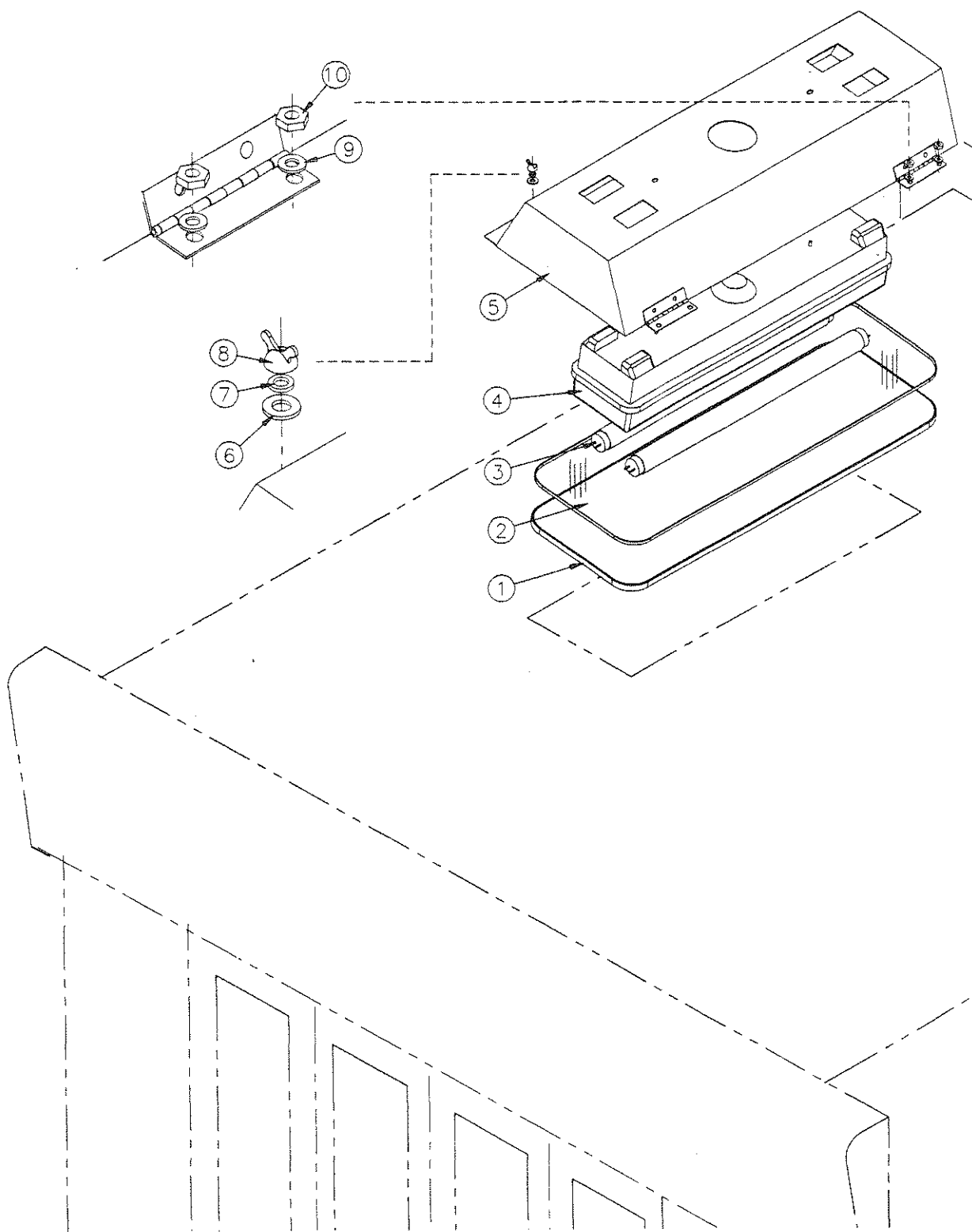


Figure 9-9. Top of Washer Pressure Piping with Manifold Coupling System

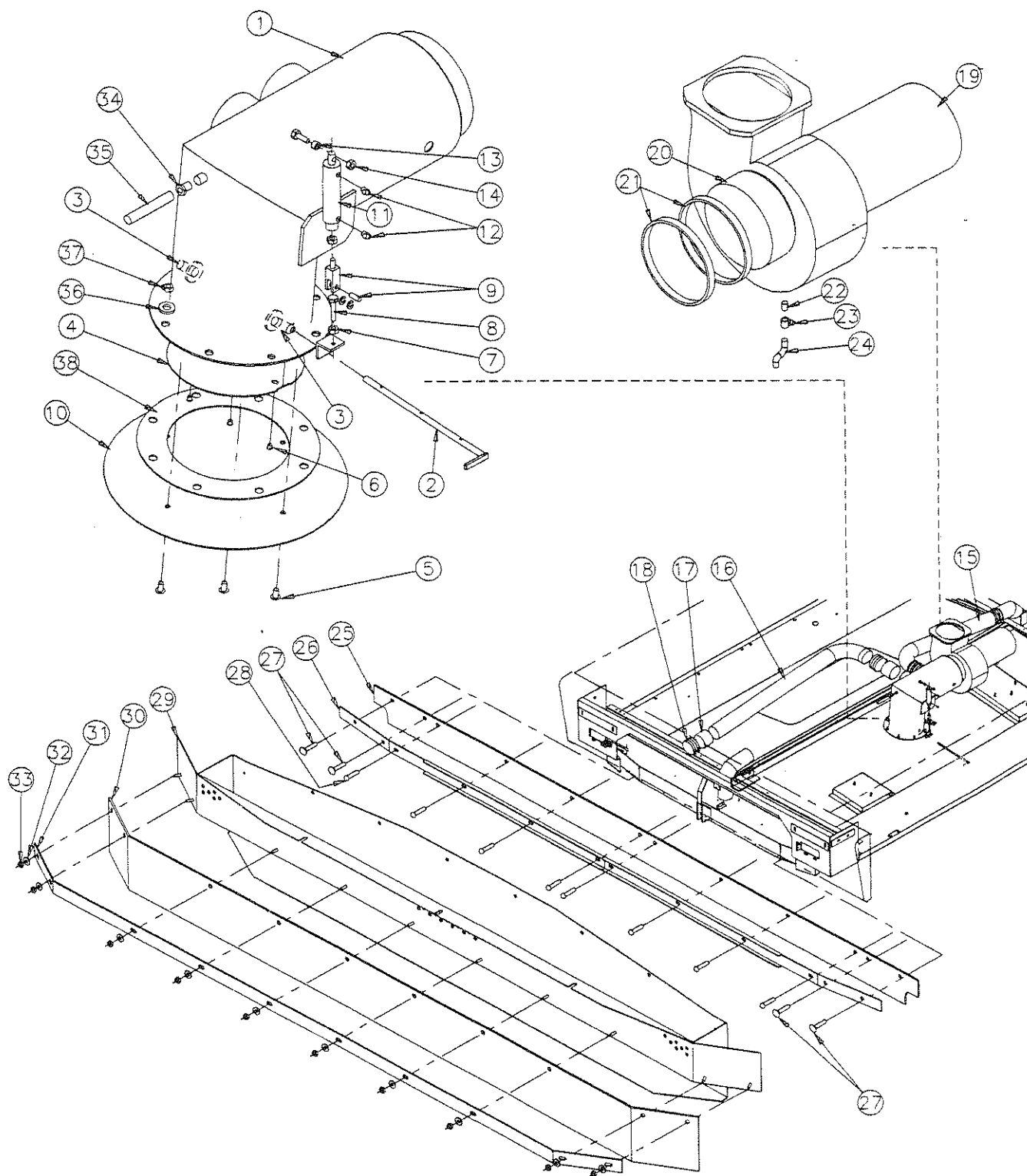
FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-9			TOP OF WASHER PRESSURE PIPING (STANDARD)..... WITH MANIFOLD COUPLING SYSTEM (OPTION)	X		X	
1	117951	650	X Gasket, Viton, 1"		3		
2	117951	196	X Clamp, Quick Disconnect, 1-1/2"	A/R	A/R		
3	117998	756	Piping, Manifold Coupling (S/N up to 3605399000)		1		
	117003	871	X Piping, Manifold Coupling (S/N from 3605399001)		1		
4	117910	062	X Ball Valve, Air, S/S, 1-1/2" T-C 3 Way (S/N up to 363139000) *		1		
	117910	608	X Ball Valve, Repair Kit Not shown)		1		
5	117003	261	Elbow, S/S, 304, 1-1/2" Tri-Clamp	1			
6	117996	343	Piping Pressure, Top, Service Side	1	1		
7	117996	342	Piping Pressure, Top, Non-Service Side	1	1		
8	117909	904	X Hose, Flexible, S/S, 1/4"M x 1/4"M x 24"Lg	4	4		
9	117909	914	X Adapter, S/S, 1/4"M x 1/4"	4	4		
10	117951	651	X Gasket, Viton, 1-1/2"	A/R	A/R		
11	117998	077	X Support, Corner Spray Jet	4	4		
12	117909	578	X Spray Jet, S/S, 1/8"	4	4		
13	117910	155	X Spray Jet, S/S, 1/4"	4	4		
14	117940	170	Nipple, S/S, 1/4" x 3-1/2"	4	4		
15	117997	799	Support, Piping, Roof	2	2		
16	117940	058	U-Bolt, S/S, 1-1/4" Pipe	2	2		
17	117998	004	Piping, Elbow, Manifold Coupling		1		
* NOTE: For units with serial Number from 3631399001 see Figure 9-17, # 37, part number 117005-886.							



REF.: #122-998-021

Figure 9-10. Interior Light Assembly

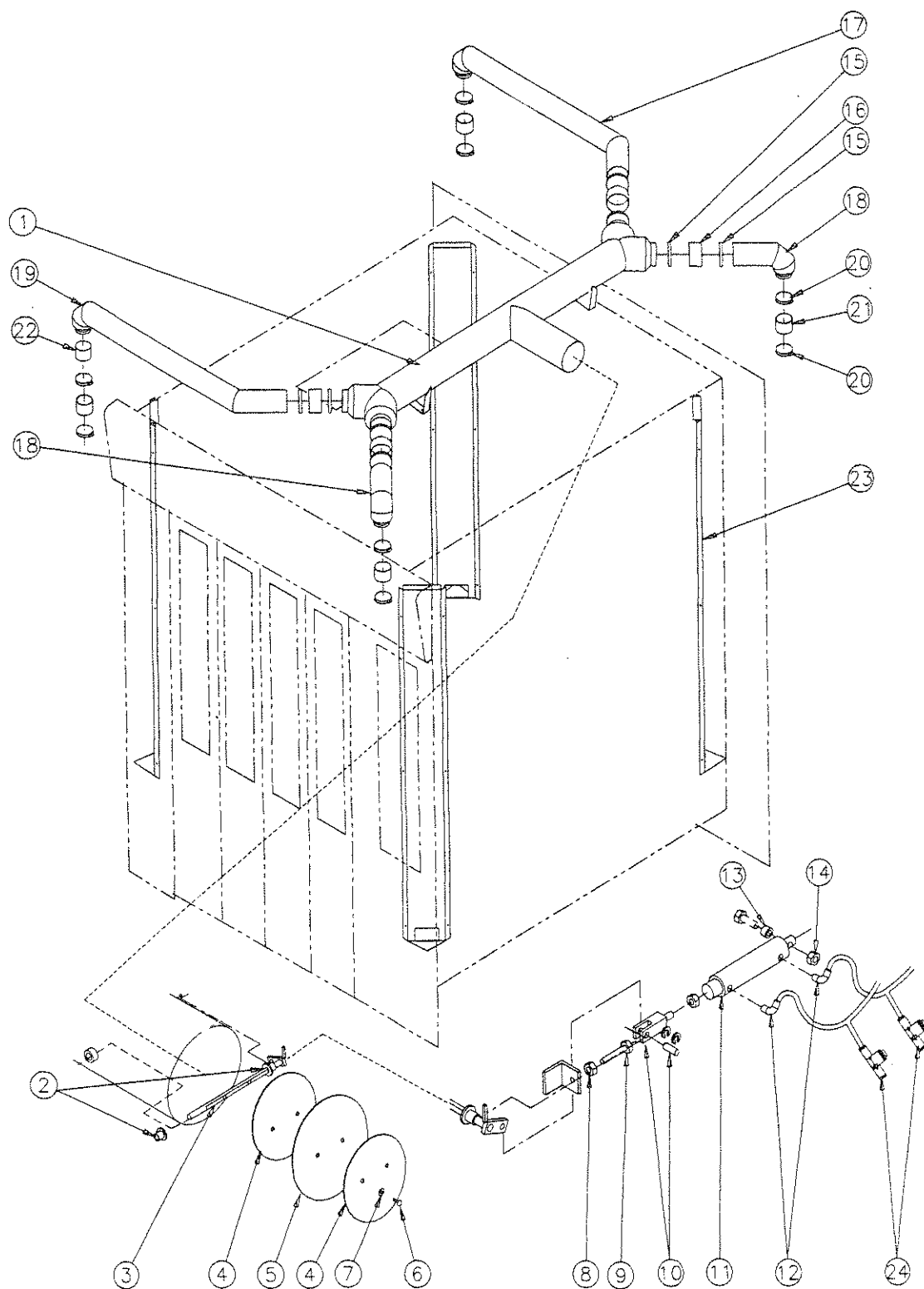
FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY
9-10			INTERIOR LIGHT ASS'Y	
1	117940	139 X	Window Gasket, Neoprene	A/R
2	117997	006 X	Glass, Tempered, 6mm, 10-1/2" x 30-1/2"	1
3	117909	451 X	Fluorescent Tube, 2' 17W	2
4	117997	308 X	Light	1
5	117997	005	Cover, Fixture, Interior Light	1
6	117950	976 X	Washer, S/S, 1/4"	2
7	117950	986 X	Washer, Lock, S/S, 1/4"	2
8	117957	192	Nut, Wing, S/S, 1/4-20	2
9	117950	976	Washer, S/S, 1/4"	4
10	117950	952	Nut, S/S, 1/4-20	4



REF.: #122-998-033

Figure 9-11. Damper and Exhaust Fan Assembly

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-11			DAMPER AND EXHAUST FAN ASS'Y	X			
			BASIC UNIT, SINGLE DOOR		X		
			DOUBLE DOOR CONFIGURATION			X	
			EXHAUST FAN (OPTION)				X
			DRYING SYSTEM (OPTION)				
1	117997	022	Duct, Exhaust Vent Damper	1	1		
2	117997	583 X	Shaft, Damper	1	1		
3	117997	580 X	Bushing, Damper	2	2		
4	117997	582 X	Baffle, Exhaust Vent Damper	1	1		
5	117950	865 X	Screw, S/S, Truss Head, 10-32 x 1/4"	4	8		
6	117950	856 X	Screw, Truss Head, S/S, 8-32 x 3/8"	3	3		
7	117950	952 X	Nut, S/S, 1/4-20	1	1		
8	117950	902 X	Bolt, S/S, 1/4-20 x 1-1/4"	1	1		
9	117905	704 X	Clevis & Pin Ass'y, 5/16"	1	1		
10	117998	078 X	Deflector, Damper	1	1		
11	117902	389 X	Cylinder, Pneumatic	1	1		
12	117951	837 X	Elbow, Pneumatic, 90°, 1/8"ORB x 1/4"OD	2	2		
13	117997	581 X	Spacer, Baffle Cylinder Exhaust	1	1		
14	117942	761	Nut, Jam, S/S, 1/4-20	1	1		
15	117997	010	Suction Tube Air, Right Side	1	1		
16	117997	009	Suction Tube Air, Left Side	1	1		
17	117950	667 X	Hose, 3" x 2-1/4", Black	4	4		
18	117950	791 X	Clamp, S/S, #52 2-13/16" x 3-3/4"	8	8		
19	117909	920 X	Fan, Exhaust			1	
20	117903	094 X	Hose, Neoprene, 1/4" x 3" x 5-3/4"ID			1	
21	117950	793 X	Clamp, S/S, #96 4-1/2" x 6-1/2"			2	
22	117999	116 X	Half-Nipple, S/S, 1/2" NPT x 1-7/8"			1	
23	117950	786 X	Clamp, S/S, #12 9/16" x 1-1/4"			1	
24	117952	305 X	Hose, Reinforced, 3/4"	A/R	A/R	A/R	
25	117003	597 X	Gasket, Top Door	1	2		
26	117003	842 X	Support, Door Top Gasket	1	2		
27	117950	827 X	Screw, S/S, Flat Head, 8-32 x 3/8	4	8		
28	117950	856	Screw, Truss Head, S/S, 8-32 x 3/8"	8	16		
29	117003	892	Ventilation Duct, Inside	2	2		
30	117003	890 X	Gasket, Exhaust Duct	2	2		
31	117003	891 X	Holder, Ventilation Duct Gasket	2	2		
32	117909	999	Washer, Lock, for Screw #8	20	20		
33	117950	976	Nut, S/S, 8-32	20	20		
34	117955	591 X	Fitting, Compression, RTD				1
35	117955	383 X	RTD Assembly with Connector				1
36	117950	977	Washer, S/S, 5/16"	8	8		
37	117950	954	Nut, S/S, 5/16-18	8	8		
38	117997	025 X	Gasket, Main Exhaust Duct & Drying	1	1		



REF. #122-997-964

Figure 9-12. Drying System Assembly

FIG. & ITEM NO.	PART NUMBER		S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-12				DRYING SYSTEM ASS'Y (WASHER ONLY)	X			
				W/O DRYING SYSTEM		X		
1	117997	094		Manifold, Principal, Drying	1			
2	117997	580	X	Bushing, Exhaust Vent Baffle	2			
3	117998	079	X	Shaft, Damper, Drying Duct	1			
4	117998	075	X	Plate, 5" dia, Drying Damper	2			
5	117998	076	X	Gasket, Drying Damper	1			
6	117950	867		Screw, Truss Head, S/S, 10-32 x 1/2"	2			
7	117906	017		Washer, Lock, Star	2			
8	117950	952		Nut, S/S, 1/4-20	1			
9	117950	902		Bolt, S/S, 1/4-20 x 1-1/4"	1			
10	117905	704	X	Clevis, 5/16"	1			
11	117902	389	X	Cylinder, Pneumatic	1			
12	117951	837	X	Elbow, Pneumatic, 90°, 1/8" ORB x 1/4"OD	2			
13	117997	581	X	Spacer, Exhaust Cylinder, Baffle	1			
14	117942	761		Nut, Jam, S/S, 1/4-20 (Nylon Inside)	1			
15	117950	792	X	Clamp, S/S, #64 3-9/16" x 4-1/2"	8			
16	117950	686	X	Hose, 4" x 2-1/4", Black	4			
17	117997	015		Manifold, Long, Right, Drying	1			
18	117997	018		Manifold, Short, Drying	2			
19	117997	016		Manifold, Long, Left, Drying	1			
20	117950	791	X	Clamp, S/S, #52 2-13/16" x 3-3/4"	8	8		
21	117950	667	X	Hose, 3" x 2-1/4", Black	4	4		
22	117996	884	X	Cap, UHMW, 3" dia x 1-1/2" Lg	0	4		
23	117997	026	X	Manifold, Drying, Inside Corner	4			
24	117910	767	X	Valve, Flow Control, 1/4" OD x 1/4" OD	2			

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY	
9-13			CONTROL PANEL ASS'Y Single Door Unit Double Door Unit	X	X
1	117996	772*	X Door, Left, Principal Control	A/R	1
2	117996	774*	X Door, Right, Principal Control	A/R	1
3	117909	581	X Lever Latch, Sealed, w/o Lock	1	2
4	117909	577	X Hinge, Mini Lift-Off	2	4
5	117940	815	X Silk Screen Cover, Main Control Panel	1	2
6	117908	938	X Gasket	A/R	A/R
7	117997	305	X Pushbutton, EMERGENCY STOP Ass'y	1	2
8	117909	909	X Plate, Legend, EMERGENCY STOP, Yellow	1	2
9	117998	742	X Protection Box, EMERGENCY STOP	1	2
10	117998	743	X Cover, Emergency Stop, Protection Box	1	2
11	117950	849	Screw, Truss Head, S/S, 6-32 x 1/4"	2	4
12	117998	754	Box, Indicator Light, Protection, cancelled, see # 21	1	2
13	117996	308	Cover, Indicator Light Box, cancelled, see # 21	1	2
14	117950	856	Screw, Truss Head, S/S, 8-32 x 3/8", cancelled, see # 21	6	12
15	117953	895	Grommet, Rubber, 5/8"ID x 7/8"OD, cancelled, see # 21	1	2
16	117997	304	X Light, Indicator, Ass'y	1	2
17	117910	447	X Led, Green, Indicator Light (Not shown)	1	2
18	117910	448	X Led, Red, Indicator Light (Not shown)	1	2
19	117909	582	X Gasket #C5-82 for Southco Lever Latch	2	4
20	117909	580	X Sealed Lever Latch, with Lock	1	2
21	117910	863	X Protector, Plastic for Indicator Light, Replaces 12, 13, 14 and 15	1	2
* If unit is single door configuration: check on which side the control is located in relation to mechanical core.					

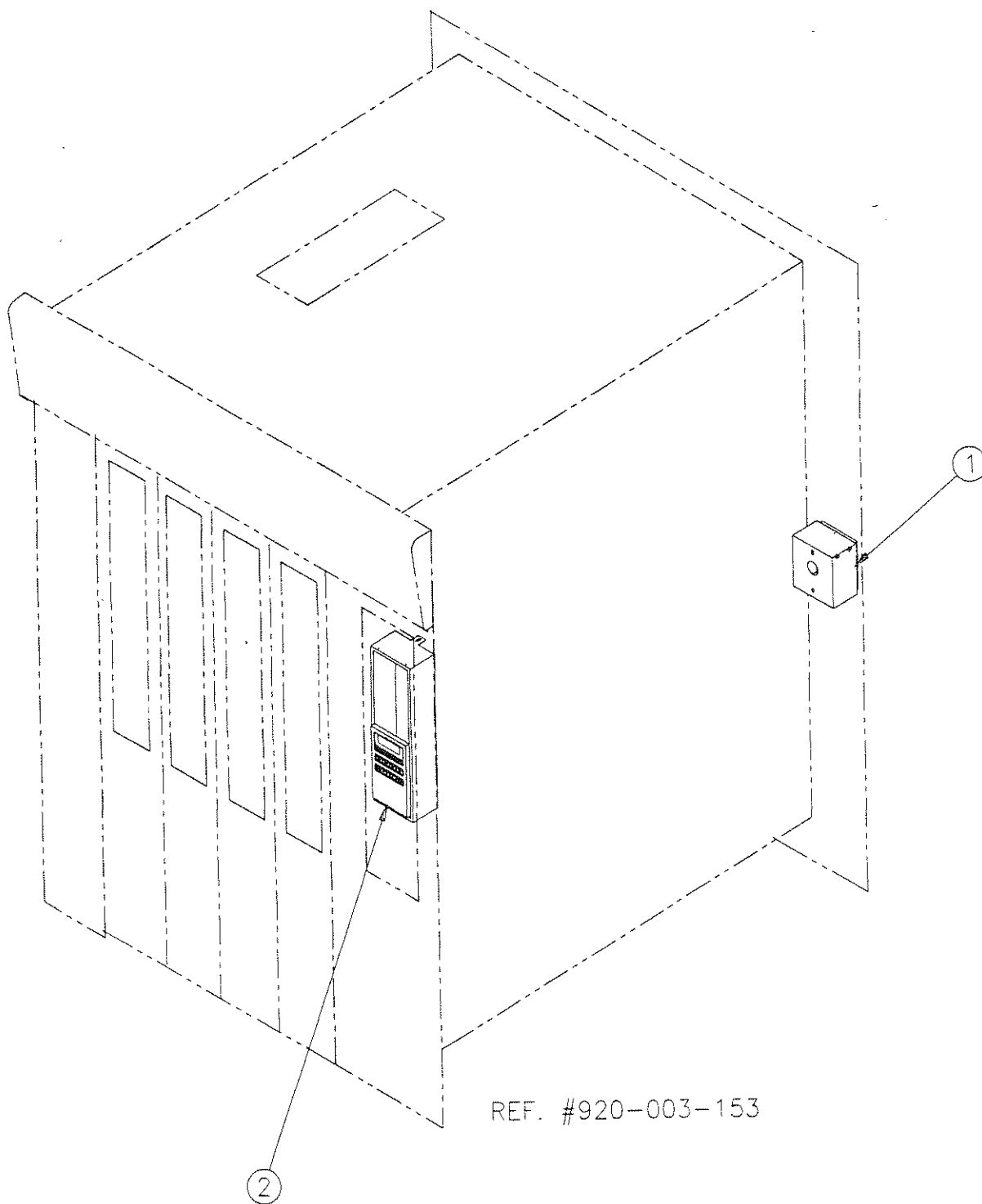
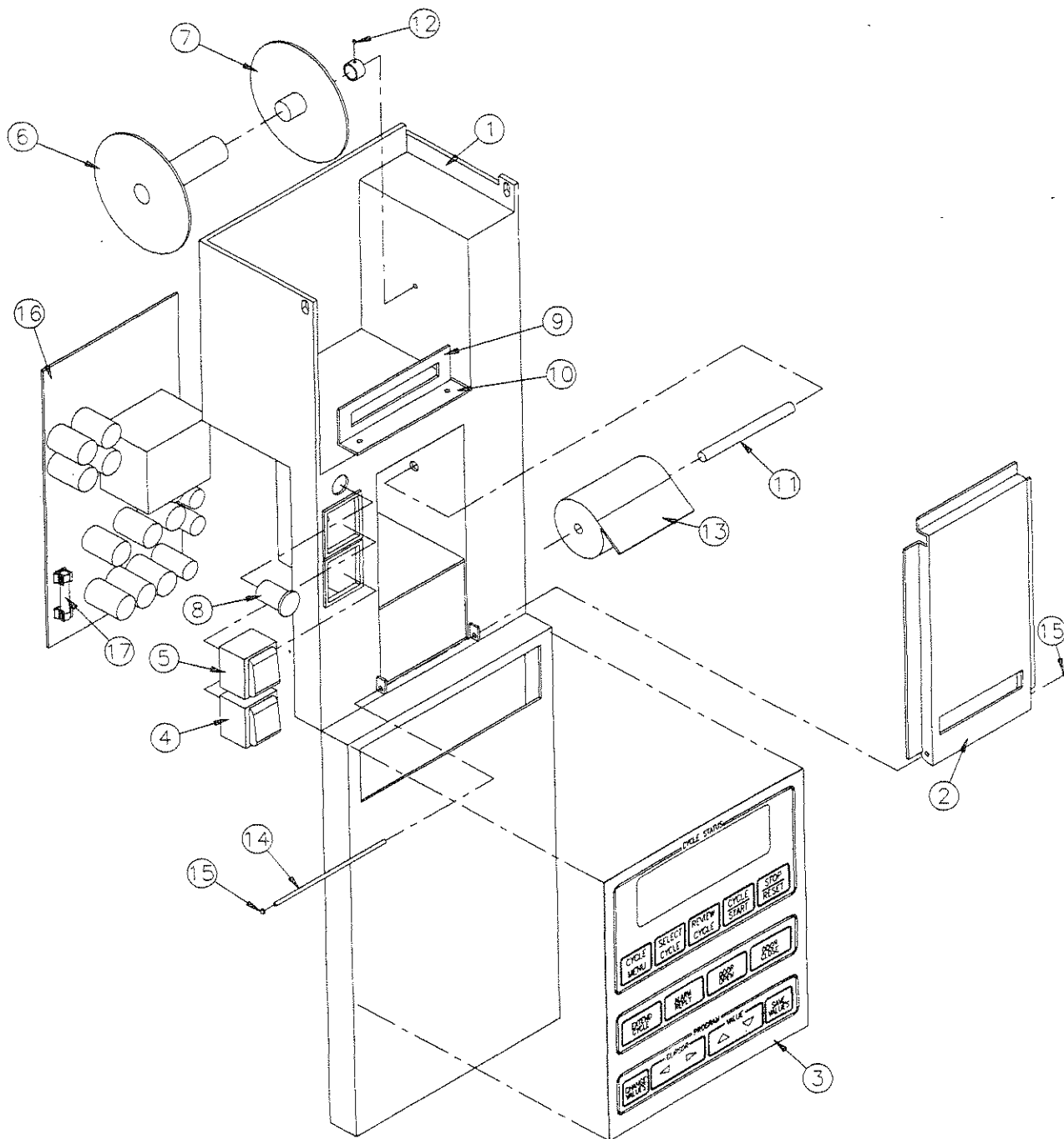


Figure 9-14. Secondary or Main Control Box Assembly

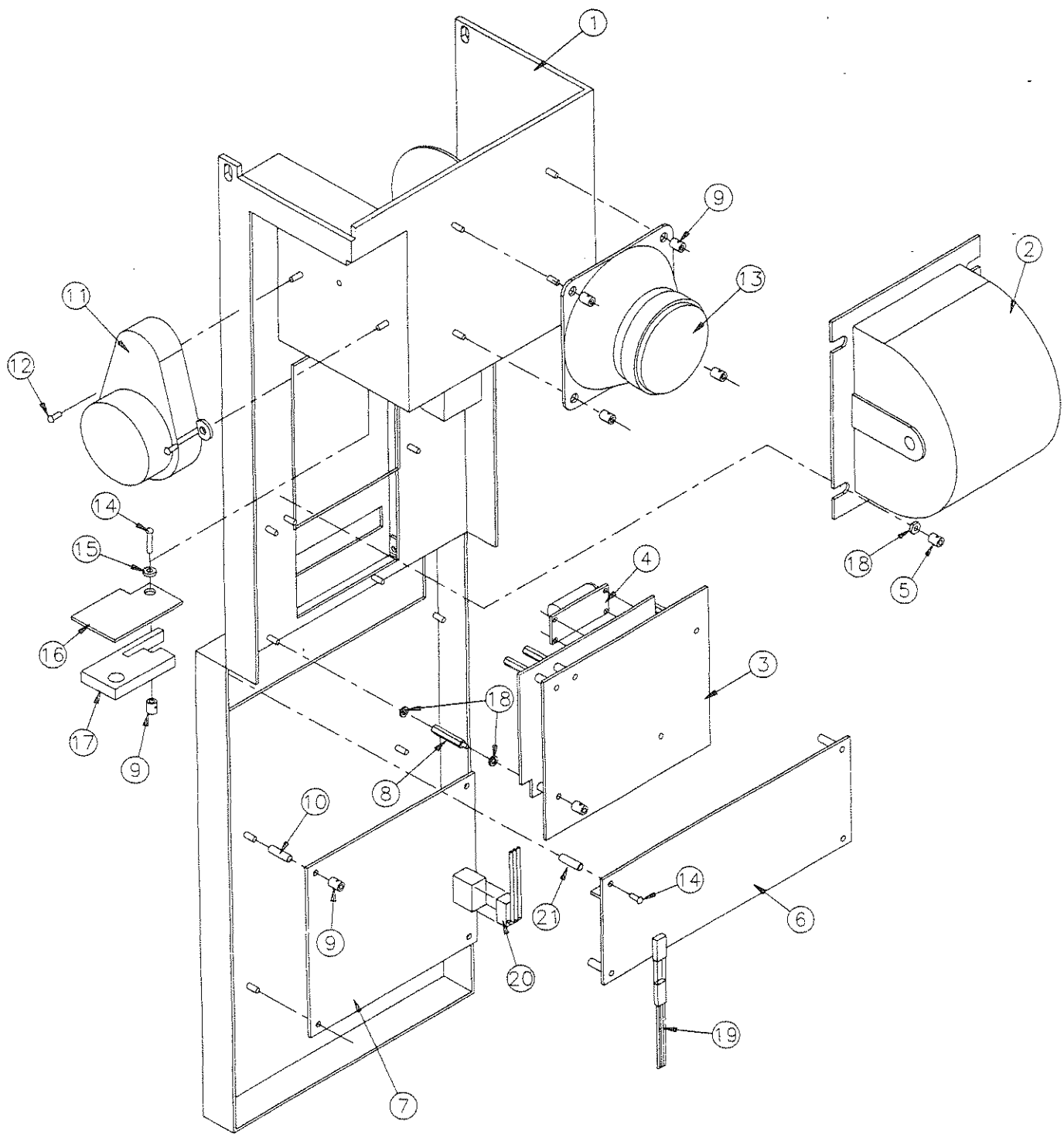
FIG. & ITEM NO.	PART NUMBER			S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-14					SECONDARY OR MAIN CONTROL BOX ASS'Y				
1					Display Non-Operating End (see Figure 9-14c)				
2					Console Ass'y (see Figures 9-14a and 9-14b)				



REF.:#122-998-074

Figure 9-14a. Control Panel Assembly: Printer/Display (Part 1 of 2)

FIG. & ITEM NO.	PART NUMBER			S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-14a	P	117955	388	X	CONTROL PANEL ASS'Y: PRINTER/DISPLAY (PART 1 OF 2) CONSOLE ASS'Y, THERMAL PRINTER	X			
1	P	146655	746	X	Bracket, Mounting	1			
2	P	93908	482	X	Platen	1			
3	P	117901	719	X	Panel, Touch	1			
4	P	93908	901	X	Switch, Printer Function	1			
5	P	93902	846	X	Switch, Control	1			
6	P	93910	248	X	Spool	1			
7	P	93910	250	X	Stud, Spool	1			
8	P	129356	001	X	Catch, Magnetic	1			
9	P	129360	448	X	Clip	1			
10	P	93908	031	X	Screw, Sems, #4-40 x 1/4	8			
11	P	129357	884	X	Shaft, Paper	1			
12	P	93908	031	X	Screw, Set, 6-32 x 3/16	1			
13	P	129359	008	X	Paper, Roll (Box of 5 rolls)	A/R			
14	P	150828	189	X	Rod, Platen	1			
15	P	150828	190	X	Nut, Press Black	2			
16	P	93910	541	X	Power Supply Ass'y	1			
17	P	117902	357	X	• Fuse, 3A, 250V	1			



REF.:#122-998-080

Figure 9-14b. Control Panel Assembly: Printer/Display (Part 2 of 2)

FIG. & ITEM NO.	PART NUMBER			S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-14b					CONTROL PANEL ASS'Y: PRINTER/DISPLAY (PART 2 OF 2) THERMAL PRINTER	X			
1	P	146655	352	X	Bracket, Mounting	1			
2	P	136800	949	X	Housing, Paper	1			
3	P	93910	531	X	Printer Ass'y, with Printer	1			
4	P	755716	005	X	Printer, with Cable	1			
5	P	84121	002	X	Nut, Keps, 6-32	4			
6	P	93908	435	X	Display	1			
7	P	146655	598	X	PC Board, Interface	1			
8	P	129361	678	X	Stand-Off, 6-32 x 1"	3			
9	P	84121	001	X	Nut, Keps, 4-40	12			
10	P	129360	821	X	Spacer	4			
11	P	93909	399	X	Gear, Motor	1			
12	P	93908	031	X	Screw, Sems, 4-40 x 1/4	8			
13	P	93910	540	X	Speaker	1			
14	P	90993	091	X	Screw, Round Head, 4-40 x 3/4	2			
15	P	26032	091	X	Washer, Flat, #4	2			
16	P	90124	091	X	Insulator, Switch	1			
17	P	129359	463	X	Switch, Micro	1			
18	P	84114	002	X	Washer, Flat #6	10			
19	P	93910	546	X	Connector Ass'y	1			
20	P	136807	690	X	Cable Ass'y, P67	1			
21	P	129361	676	X	Stand-Off, 4-40 x 7/16	4			

FIG. & ITEM NO.	PART NUMBER			S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-14c	P	117902	745		DISPLAY, NON OPERATING END, CONSOLE ASSEMBLY	X			
1	P	93908	435	X	Display	1			
2	P	146655	598	X	PC Board, Interface	1			
3	P	117901	719	X	Panel, Touch	1			
4	P	93910	540	X	Speaker	1			

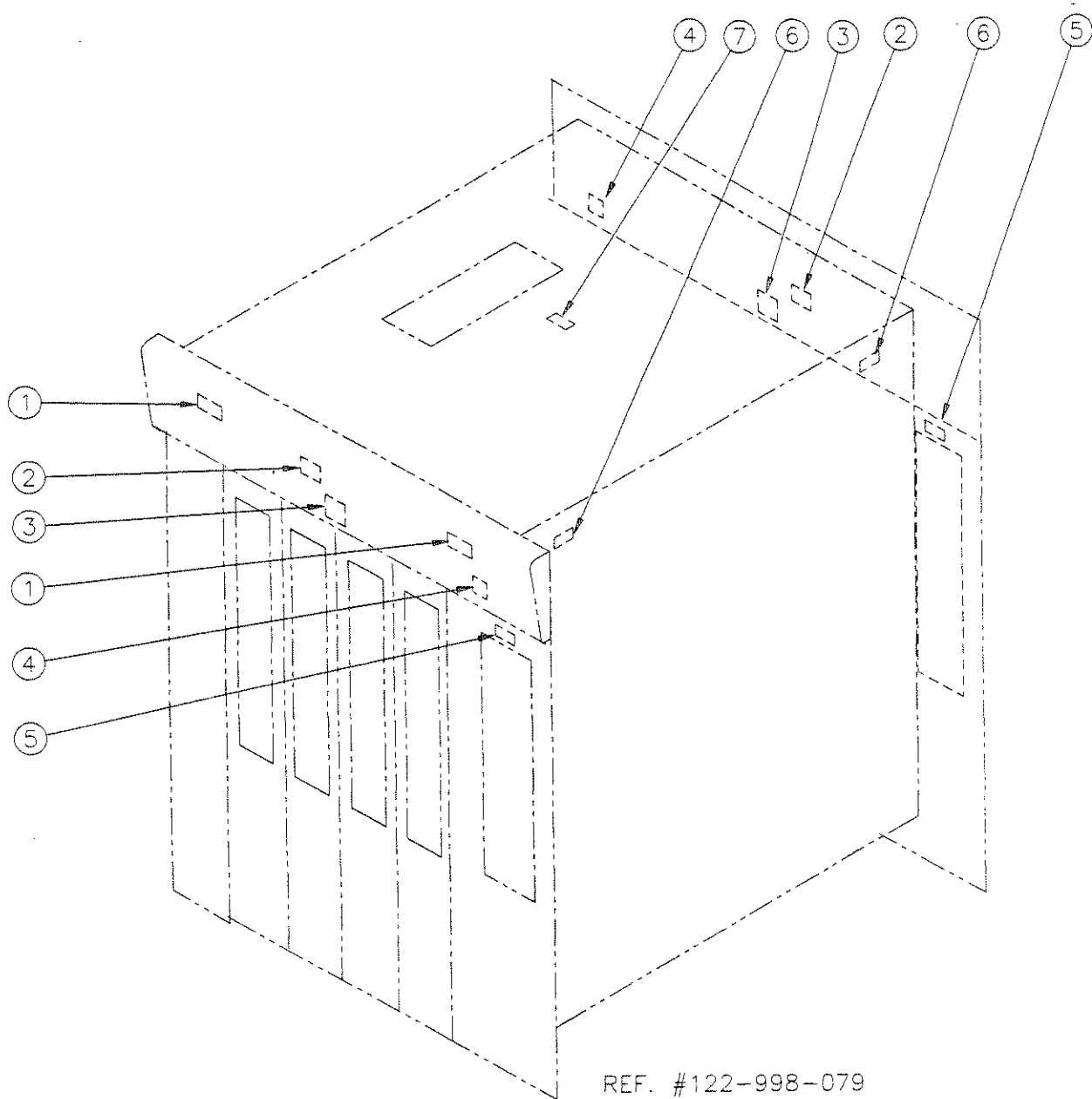
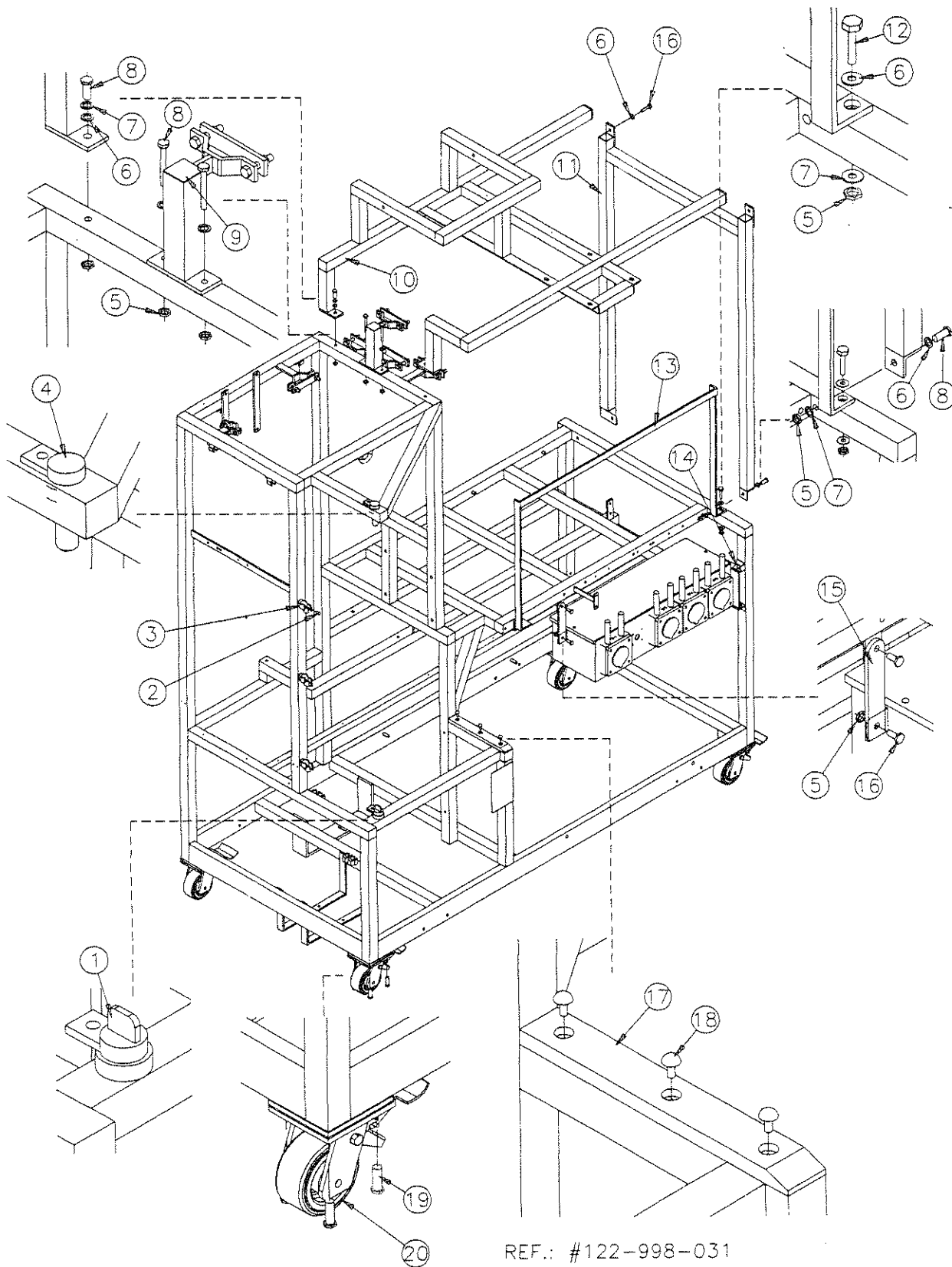


Figure 9-15. Wash Chamber Sensors, Limit Switches and Indicating Lights

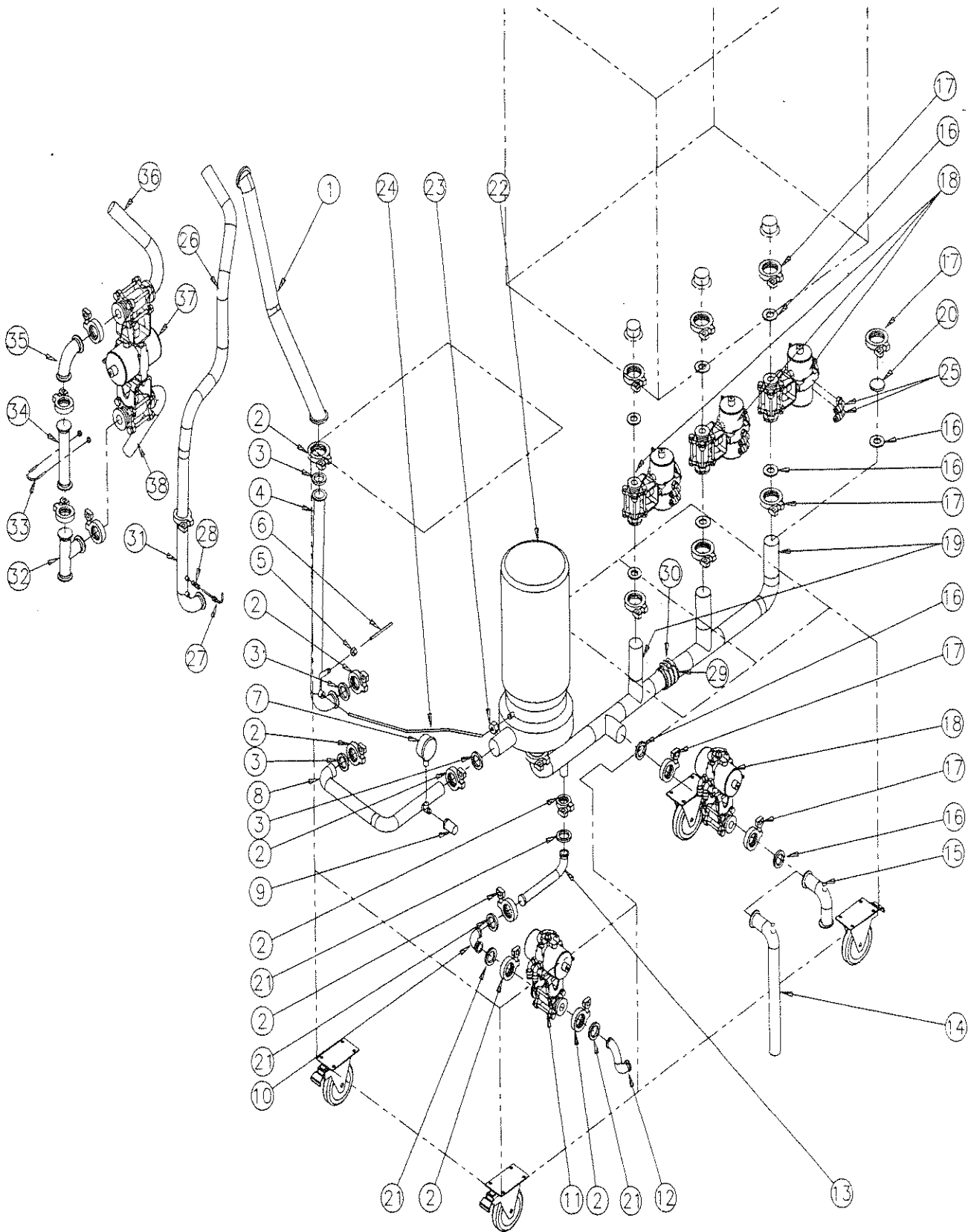
FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-15			WASH CHAMBER SENSORS, LIMIT SWITCHES AND INDICATING LIGHTS				
			Single Door Unit	X			
			Double Door Unit		X		
			Drying System			X	
1	P		Safety Guard Switch Ass'y (see Figure 9-7)	2	2		
2	P		Door Safety Switch Ass'y (see Figure 9-6a)	1	2		
3	P		Sensor Photoelectric Ass'y (see Figure 9-5)	1	2		
4	P		Door Closed Sensor, Ass'y (see Figure 9-6a)	1	2		
5	P		Light, Indicator Ass'y (see Figure 9-13)	1	2		
6	P		Sensor, Traveler Ass'y (see Figure 9-8a)	2	2		
7	P		RTD Ass'y (see Figure 9-11)			1	



REF.: #122-998-031

Figure 9-16. Mechanical Core Frame

FIG. & ITEM NO.	PART NUMBER		S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-16				MECHANICAL CORE FRAME	X			
				DRYING OPTION		X		
1	117996	798		Rod, Bottom, Electric Box	1			
2	117950	855		Screw, Truss Head, S/S, 8-32 x 1/4"	A/R	A/R		
3	117953	610		Clip, Assembly	A/R	A/R		
4	117996	797		Rod, Upper, Electric Box	1			
5	117950	954		Nut, S/S, 5/16-18	A/R	A/R		
6	117950	977		Washer, S/S, 5/16"	A/R	A/R		
7	117950	987		Washer, Lock, S/S, 5/16"	A/R	A/R		
8	117950	912		Bolt, S/S, 5/16-18 x 2-1/2"	A/R	A/R		
9	117998	011		Support Water Inlet w/o Tank (if direct cold water injection) (Up to S/N 3605399000)	1			
10	117997	973		Support, Horizontal Drying System		1		
11	117997	974		Support, Vertical Drying System		1		
12	117950	911		Bolt, S/S, 5/16-18 x 2-1/4"	2			
13	117989	187		Support, Wire Duct	1			
14	117997	782	X	Rod, Detergent Injection Box	1			
15	117996	791	X	Support, Detergent Injection Pump Box	1			
16	117950	905		Bolt, S/S, 5/16-18 x 3/4"	A/R	A/R		
17	117996	713	X	Pad, Friction, Electric Box	1			
18	117950	867		Screw, Truss Head, S/S, 10-32 x 1/2"	3			
19	117950	915		Bolt, S/S, 3/8-16 x 3/4"	16			
20	117995	797	X	Rotating Wheel, 4"	4			



REF. #122-997-976

Figure 9-17. Pressure Pump with Additional Chemical Tank, with Manifold Coupling System

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-17			PRESSURE PUMP (TWO TANKS STANDARD)	X			
			WITH ADDITIONAL CHEMICAL TANK		X		
			WITH MANIFOLD COUPLING SYSTEM (OPTION)			X	
1	117997	080 X	Hose, Flexible, Pump Outlet, High Pressure	1	1		
2	117951	196 X	Clamp, Quick Disconnect, 1-1/2"	A/R	A/R		
3	117951	651 X	Gasket, Viton, 1-1/2"	A/R	A/R		
4	117997	566	Piping, Booster Outlet (S/N. up to 3609299000)	1	1		
5	117955	591 X	Fitting, Compression, RTD (S/N. up to 3609299000)	1	1		
6	117955	383 X	RTD Assembly with Connector (S/N. up to 3609299000)	1	1		
7	117954	462	Plug, S/S, 1/4"	1	1		
8	117909	802 X	Pressure Gauge, 0-200 Psi 1/4", S/S (to install for maintenance)	1	1		
9	117996	344	Piping, Pump to Booster	1	1		
10	117909	640 X	Transmitter, Piping Pressure, 0-150 Psi	1	1		
11	117953	690	Elbow, 316L, S/S, 90°, 1"T-C x 1"T-C	1	1		
12	117909	604 X	Ball Valve, Pneumatic 1" Ass'y	1	1		
13	117997	002	Piping, Fill, Suction Pump #2	1	1		
14	117998	005	Piping, Fill, Suction Pump #1	1	1		
15	117999	137	Piping, Drain, Pressure with Cooldown Tank (If cooldown Tank or pH Neutralizer present)	1	1		
16	117997	988	Elbow, Pressure Piping (w/o Cooldown Tank for pH Neutralizer)	1	1		
17	117951	499 X	Gasket, Viton Tri-Clamp 2"	A/R	A/R		
18	117950	808 X	Clamp, Quick Disconnect, 2"	A/R	A/R		
19	117997	591 X	Valve, Recirculation, Pneumatic, 2", Ass'y	3	4		
20	117996	345	Piping, Pressure, Tank to Pump (S/N. up to 3609299000)	1	1		
21	117003	806	Piping, Pressure, Recirculating at Pump (S/N. from 3609299001) ...	1	1		
22	117003	879	Piping, Pressure, Recirculating at Pump (S/N. from 3609299001) ...	1	1		
23	117953	970	End Cap, Solid, 2", 316L, 3A	1	0		
24	117951	650 X	Gasket, Viton, 1"	A/R	A/R		
25	117909	550 X	Recirculation Pump, 10 HP 208/400/480V (High Pressure) (see Figure 9-17a)	1	1		
26	117909	444 X	Adapter, S/S, 1/8"M x 1/4"	1	1		
27	117909	904 X	Hose, S/S, 1/4"M x 1/4"M x 24"Lg	1	1		
28	117951	837 X	Elbow, Pneumatic, 90°, 1/8"ORB x 1/4"OD	8	10		
29	117005	712	Hose, Flexible, S/S, 1-1/2" T-C x 60" Lg (S/N. from 3609299001) ...	1	1		
30	117910	806 X	RTD # 223-11291-01 Quantem (S/N. from 3609299001)	1	1		
31	117954	593 X	Fitting, Compression, T/C, ss, 30012BT (S/N. from 3609299001)	1	1		
32	117950	688 X	Hose, 2" x 2-1/4", Black	1	1		
33	117950	673 X	Clamp, S/S, # 32, 9/16" x 2-1/2"	3	3		
34	117005	710	Piping, Booster Outlet (S/N. from 3609299001)	1	1		
35	117909	488	Units with S/N from 3631399001: Tee, S/S 304, 1-1/2", Tri-clamp			1	
36	117940	111	U-Bolt, S/S, 1" Pipe (Guide Rails)			1	
37	117942	761	Nut, Jam, S/S 1/4-20 (Nylon inside)			2	
38	117005	896	Piping for 3 Way Valve			1	
39	117909	486	Elbow, S/S 304, 1-1/2" Tri-clamp #JC2			1	
40	117005	712 X	Hose, Flexible, S/S 1-1/2" T-C x 60" LG			1	
41	117005	886 X	Double Ball Valve, Air, S/S, 1-1/2" TC, 3Way			1	
42	117910	608 X	Ball Valve, Repair Kit (Not Shown)			2	
43	117911	081 X	Hose, Flexible, S/S, 1" T-C x 61" LG*			1	
* NOTE: For units with S/N up to 3631399000 see Figure 9-9, #4, part number 117910-062.							

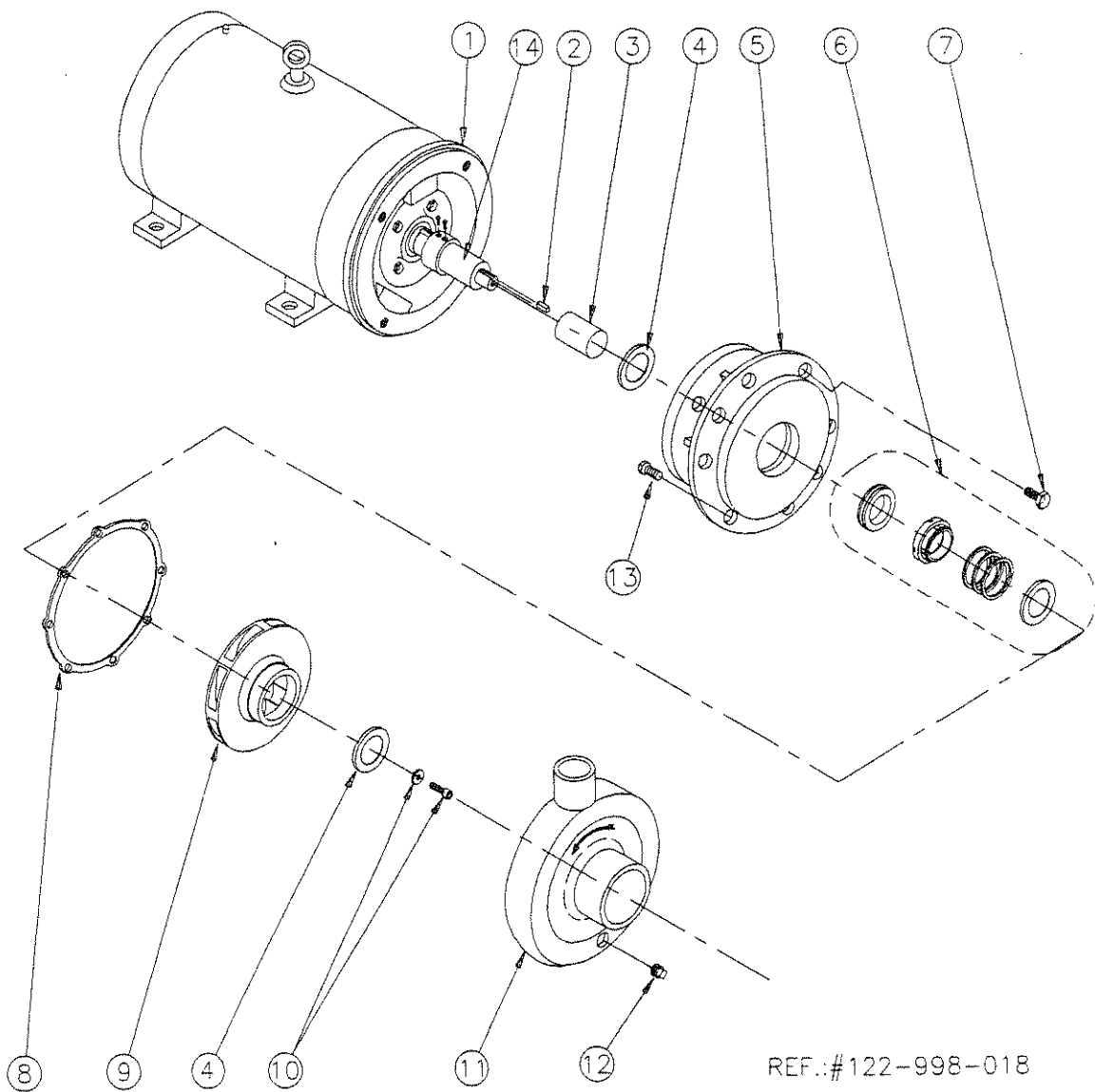


Figure 9-17a. Recirculation Pump, 10 Hp, Assembly

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY
9-17a	117909	550	RECIRCULATION PUMP, 10 HP, 208/400/480V (High Pressure).	X
1	117998	073	X Motor, Pump	1
	117910	402	X Kit, Motor Pump Repair #4095 (Not shown) (Includes 3, 4, 8 + Loctite)	
2	117997	384	X Key, Impeller, Shaft	1
3	117996	807	X Shaft, Sleeve Pump Shaft	1
4	117996	833	X Gasket, Lockdown & Sleeve	1
5	117909	452	X Flange, Transfer Pump 10 Hp	1
6	117910	061	X Seal Kit, JB150S Pump Shaft	1
7	117958	708	Bolt, S/S, 1/2-13 x 1-1/4"	4
8	117997	965	X Gasket, Teflon, Pump Casing	1
9	117997	969	X Impeller, Pump	1
10	117996	850	X Impeller, Lockdown Pump 10 Hp	1
11	117997	313	X Casing, Pump	1
12	117954	461	Plug, S/S, 1/8" M	1
13	117950	900	Bolt, S/S, 1/4-20 x 3/4"	8
14	117996	802	X Pump, Shaft, Adapter	1

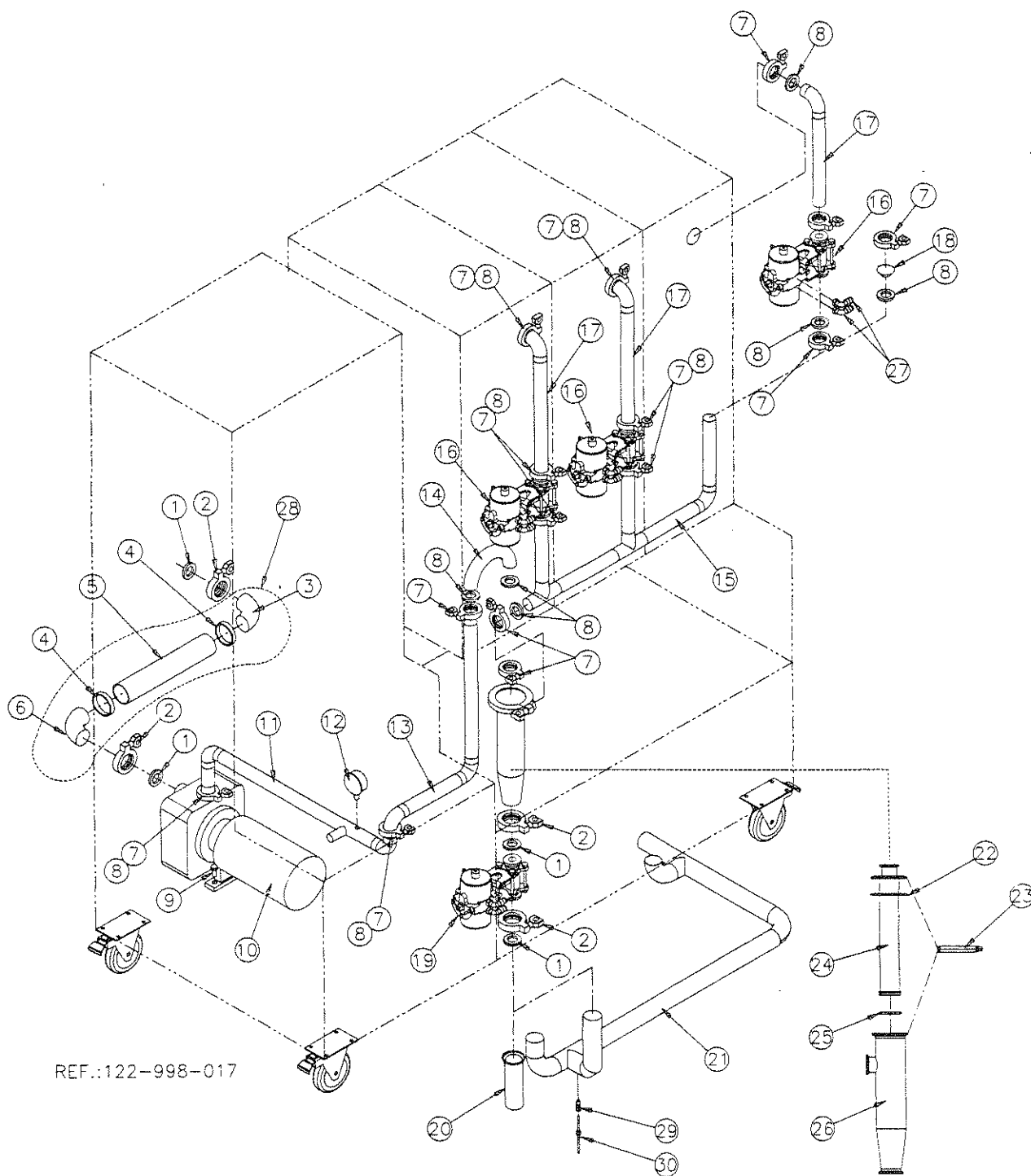
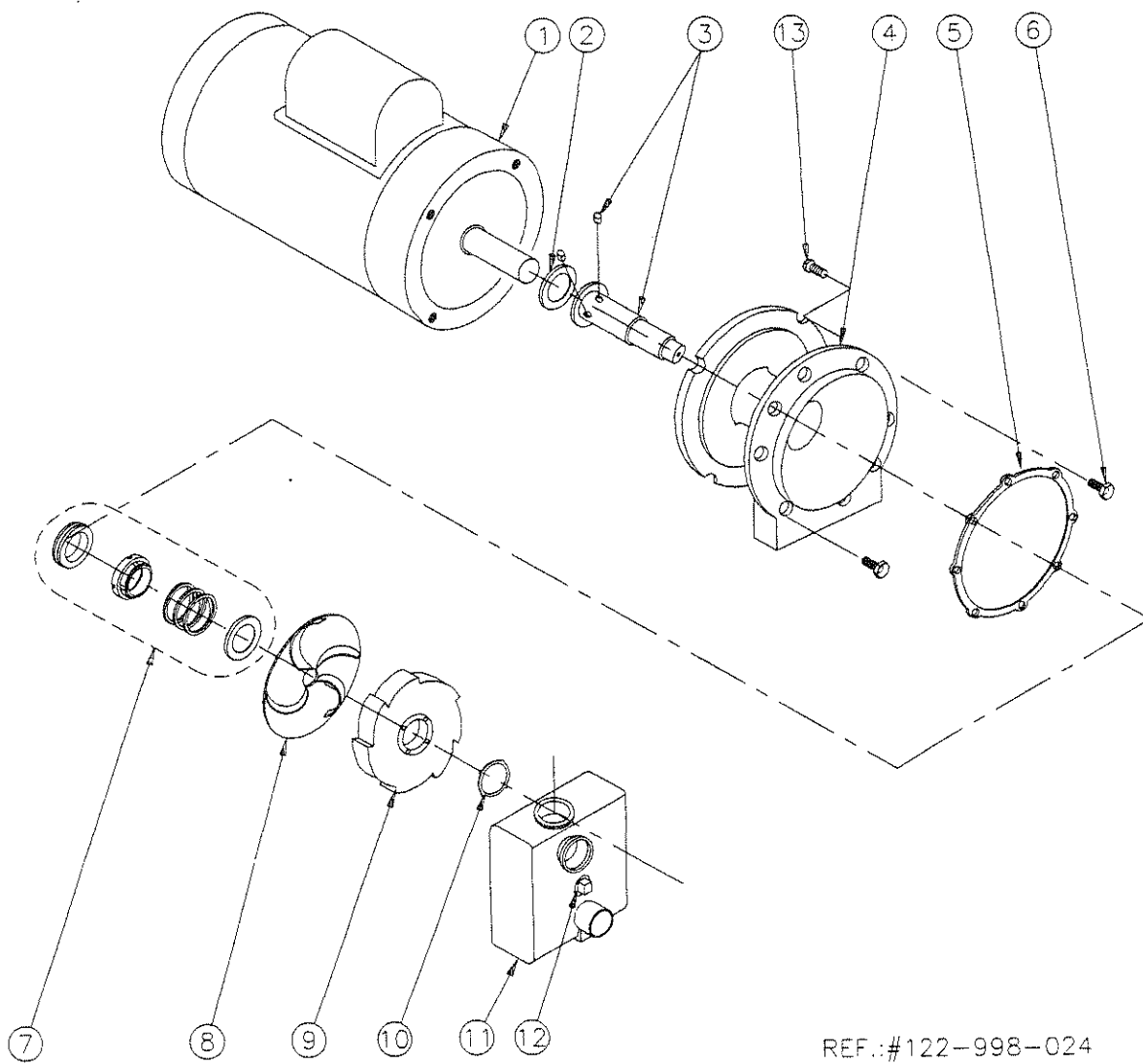


Figure 9-18. Suction Pump and Return Piping Assembly

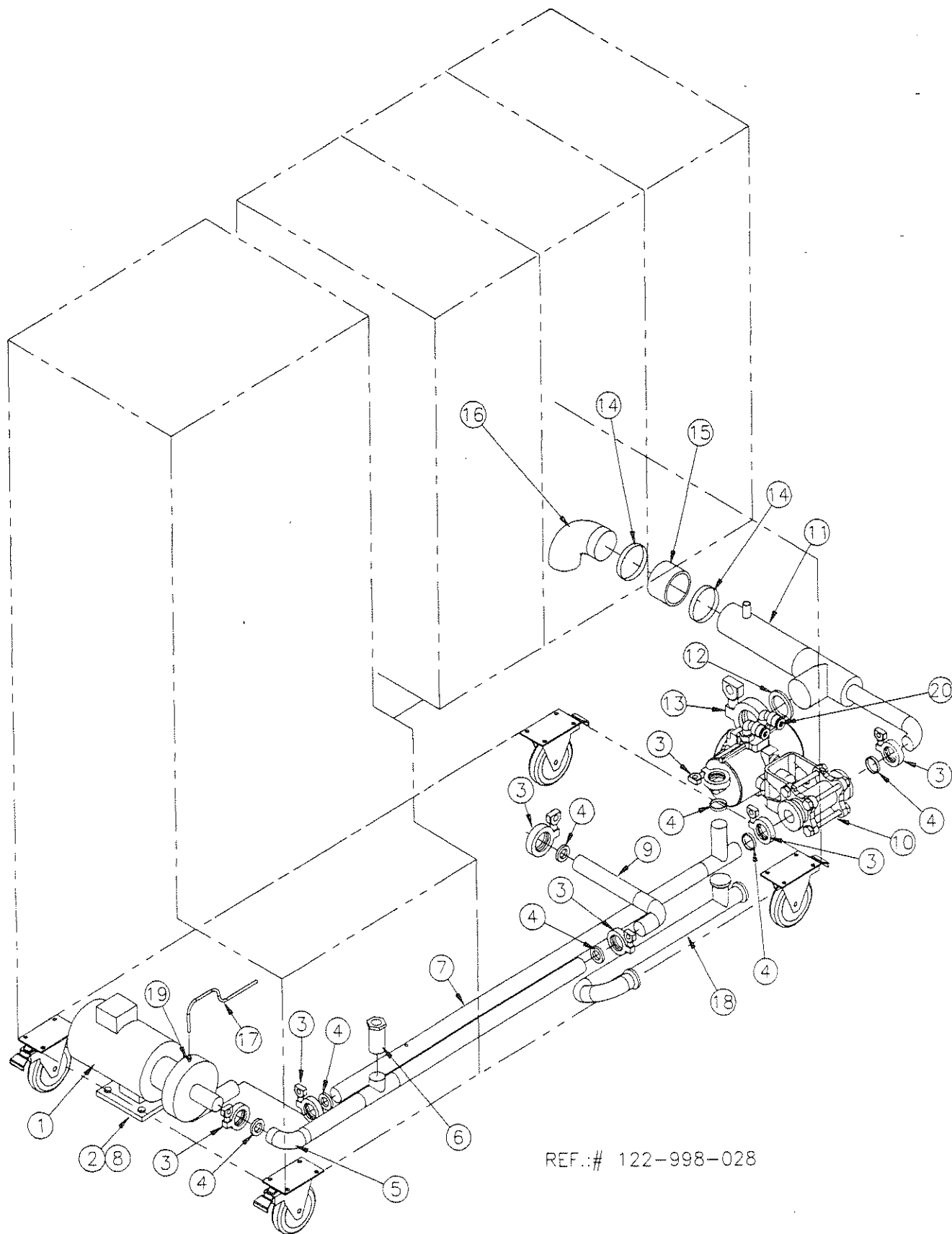
FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-18			SUCTION PUMP AND RETURN PIPING ASS'Y (TWO TANKS STANDARD) ADDITIONAL WASH TANK	X		X	
1	117951	499	X Gasket, Viton, Tri-Clamp 2"	4	4		
2	117950	808	X Clamp, Quick Disconnect, 2"	4	4		
3	117998	368	Adapter, Tri-Clamp, 2", 3-1/2"Lg	1	1		
4	117910	726	Reinforced, Clamp, 68-73 mm	2	2		
5	117909	601	Hose, Rubber, Flexible, 2"	A/R	A/R		
6	117996	824	Adapter, 2" Tri-Clamp, 8-1/2"Lg	1	1		
7	117951	196	X Clamp, Quick Disconnect, 1-1/2"	A/R	A/R		
8	117951	651	X Gasket, Viton, 1-1/2"	A/R	A/R		
9	117950	915	Bolt, S/S, 3/8-16 x 3/4"	2	2		
10	117909	551	X Pump, 3 Hp, 208/400/480V (see Figure 9-18a)	1	1		
11	117996	358	Piping, Suction Pump Outlet #1	1	1		
12	117954	462	Plug, S/S, 1/4"	1	1		
	117909	801	X Pressure, Gauge, 0-60 PSI 1/4", S/S, (to install for maintenance) ...	1	1		
13	117996	392	Piping, Suction Pump Outlet #2	1	1		
14	117996	359	Piping, Return, Outlet, Self-Cleaning Filter	1	1		
15	117996	355	Piping, Main, Return to Tanks	1	1		
16	117997	590	X Valve, Recirculation, Pneumatic, 1-1/2" Ass'y	2	3		
17	117996	354	Piping, Tank Return	2	3		
18	117909	363	Cap, Tri-Clamp, 304, S/S, 1" & 1-1/2"	1			
19	117997	591	X Valve, Recirculation, Pneumatic, 2" Ass'y	1	1		
20	117995	751	Piping Drain Suction with Cooldown Tank or pH Neutralizer (Units with S/N up to 3605399000)	1	1		
21	117997	754	Piping, Drain, w/o Cooldown Tank or pH Neutralizer (Units with S/N. up to 3605399000)	1	1		
	117003	859	Piping, Drain, w/o Cooldown Tank or pH Neutralizer (Units with S/N. from 3605399001)	1	1		
22	117954	006	X Gasket, Viton, 3"	1	1		
23	117951	387	X Clamp, Quick Disconnect, 3"	1	1		
24	117989	189	X Cartridge, Self-Cleaning Filter	1	1		
25	117905	503	X O'Ring, Viton, 2-3/8"OD x 2"ID	1	1		
26	117989	190	Self-Cleaning, Filter Core	1	1		
27	117951	837	X Elbow, Pneumatic, 90°, 1/8"ORB x 1/4"OD	6	8		
28	117997	082	X Hose, Flexible, Pump Inlet, 2" Ass'y	1	1		
29	117954	593	Fitting, Compression, T/C, SS30012BT	1	1		
30	117910	806	RTD, # 223-11291-01, Quantem	1	1		



REF.:#122-998-024

Figure 9-18a. Suction Pump Assembly

FIG. & ITEM NO.	PART NUMBER		S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-18a	117909	551	X	SUCTION PUMP ASS'Y	X			
1	117997	540	X	Motor SP150SS 208/400/480V	1			
2	117997	537	X	Slinger 7/8" Pump	1			
3	117996	802	X	Pump, Shaft with Set Screws	1			
4	117996	851	X	Flange, Pump 3 Hp, Transfer	1			
5	117997	340	X	Gasket, Pump Casing	1			
6	117950	916		Bolt, S/S, 3/8-16 x 1"	4			
7	117997	535	X	Seal & Seat, Viton, Pump	1			
8	117910	217	X	Impeller, 3 Hp 3-3/4" dia x .500, Price	1			
9	117910	218	X	Diffuser, Impeller 3 Hp 4-3/4", Price	1			
10	117998	002	X	Gasket, Diffuser, Pump	1			
11	117996	856	X	Casing, Pump Suction 3 Hp	1			
12	117952	209		Plug, S/S, 1" M	1			
13	117950	905		Bolt, S/S, 5/16-18 x 3/4"	5			
	117910	401	X	Repair Kit, Pump (Not shown) (Includes 2, 3, 5)				



REF.:# 122-998-028

**Figure 9-19. Drain Piping with pH Neutralizing
Drain Piping (with Cooledown Tank Only)**

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-19			DRAIN PIPING WITH pH NEUTRALIZING	X			
			DRAIN PIPING (WITH COOLDOWN TANK ONLY)		X		
1	117909	784	X Pump 1/3 Hp 208/230/460V (see Figure 9-19a)	1	0		
2	117950	915	Bolt, S/S, 3/8-16 x 3/4"	4	0		
3	117951	196	X Clamp, Quick Disconnect, 1-1/2"	7	5		
4	117951	651	X Gasket, Viton, 1-1/2"	7	5		
5	117996	738	Piping, Neutralization Pump Inlet	1	0		
6	117909	559	X Probe, pH	1	0		
7	117996	741	Piping, Neutralization Pump Outlet	1	0		
8	117950	978	Washer, S/S, 3/8"	4	0		
9	117996	775	Piping, Drain, Cooldown Tank	1	1		
10	117997	590	X Valve, Recirculation, Pneumatic, 1-1/2" Ass'y	1	1		
11	117996	744	Piping, Drain with Cooldown Tank	1	1		
12	117954	006	X Gasket, Viton, 3"	1	1		
13	117951	387	X Clamp, Quick Disconnect, 3"	1	1		
14	117950	791	X Clamp, S/S, #52 2-13/16" x 3-3/4"	2	2		
15	117950	667	X Hose, 3" x 2-1/4", Black	1	1		
16	117997	755	Piping, Drain with Cooldown Tank	1	1		
17	117910	356	X Hose, S/S, 1/4"M x 1/4"M x 36"Lg	1	0		
18	117996	773	Piping, Drain, Cool down Tank w/o Neutralizing	0	1		
19	117909	444	X Adapter, S/S, 1/8"M x 1/4"	1	0		
20	117951	837	X Elbow, Pneumatic, 90°, 1/8"ORB x 1/4"OD	2	2		

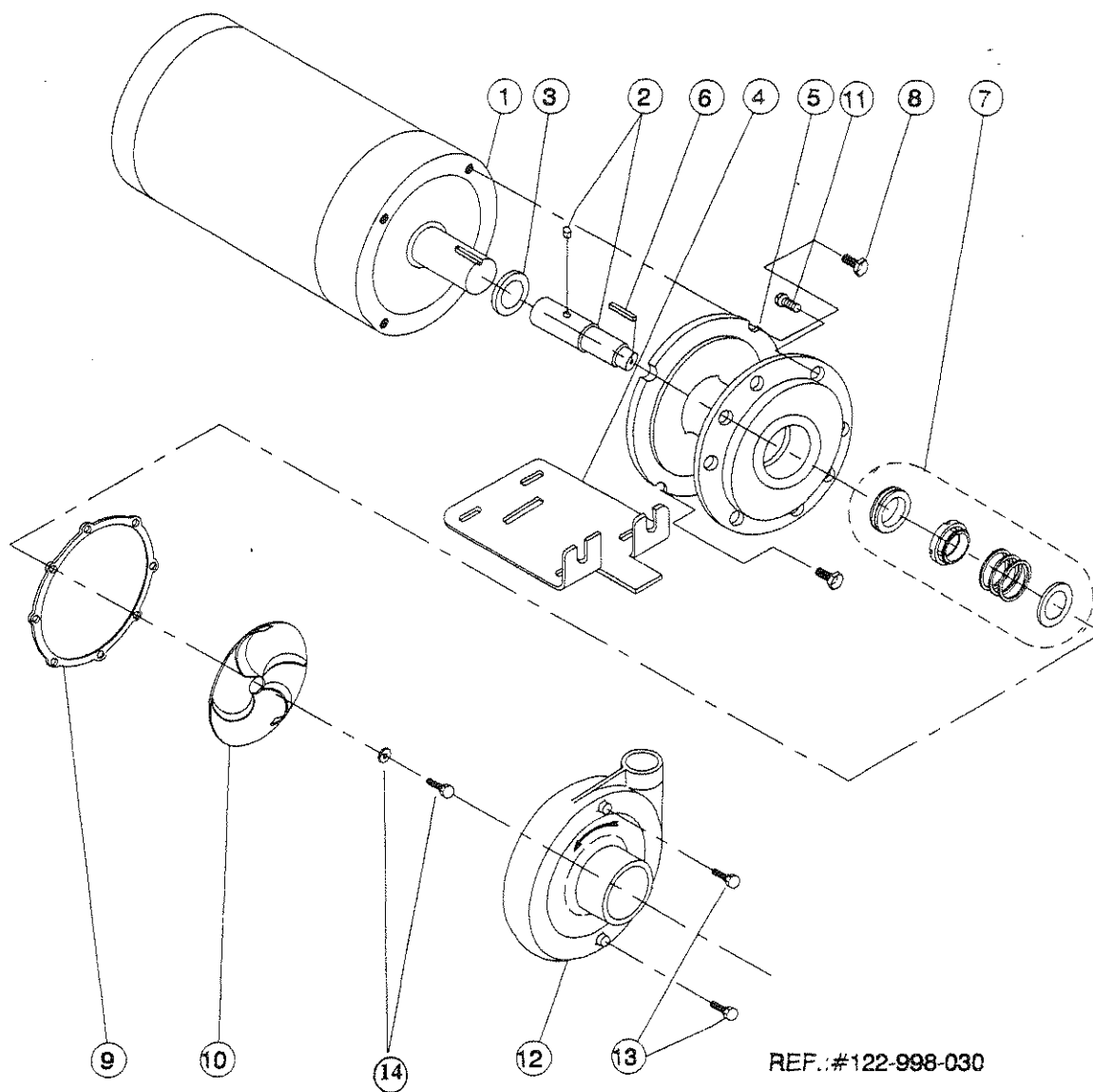
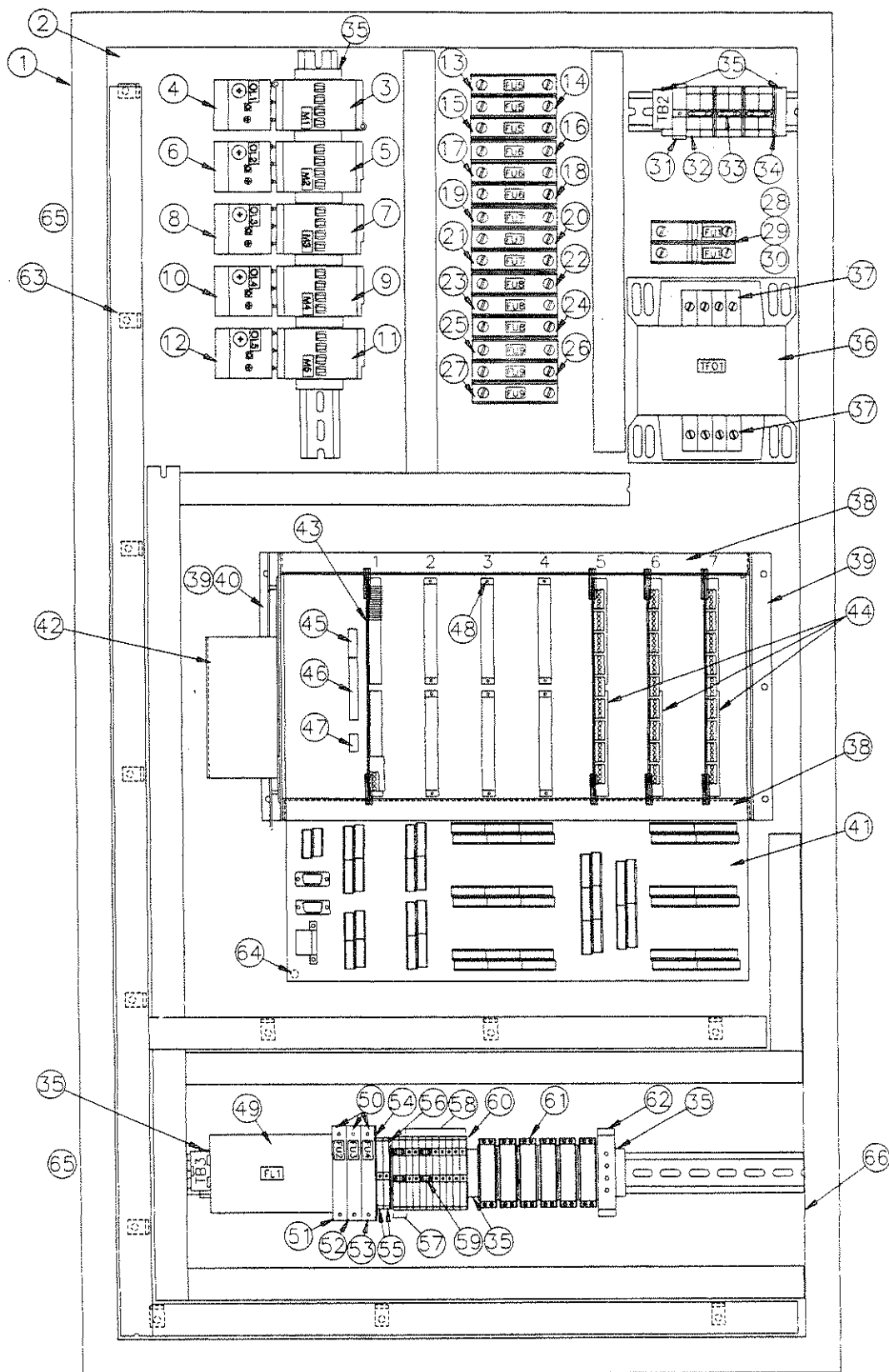


Figure 9-19a. Pump 1/3 Hp 208/230/460V Assembly

FIG. & ITEM NO.	PART NUMBER		S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-19a	117909	784	X	PUMP 1/3 HP 208/230/460V ASSEMBLY	X			
1	117909	585	X	Motor Pump	1			
2	117996	859	X	Shaft with Set Screws 5/8"ID Pump	1			
3	117909	782	X	Slinger Pump	1			
4	117910	396	X	Base Plate Pump	1			
5	117997	359	X	Flange Transfer Pump	1			
6	117997	532	X	Key, Impeller, Shaft Pump	1			
7	117996	813	X	Seal & Seat, Viton, Pump	1			
8	117950	916		Bolt, S/S, 3/8-16 x 1"	4			
9	117910	397	X	Gasket Pump Casing	1			
10	117910	398	X	Impeller 3" Pump	1			
11	117950	900		Bolt, S/S, 1/4-20 x 3/4"	8			
12	117910	399	X	Casing, Pump	1			
13	117954	461		Plug, S/S, 1/8" M	2			
	117910	400	X	Repair Kit Pump (Not shown)				
14	117910	766	X	Impeller, Lockdown Kit (Bolt and washer)	1			

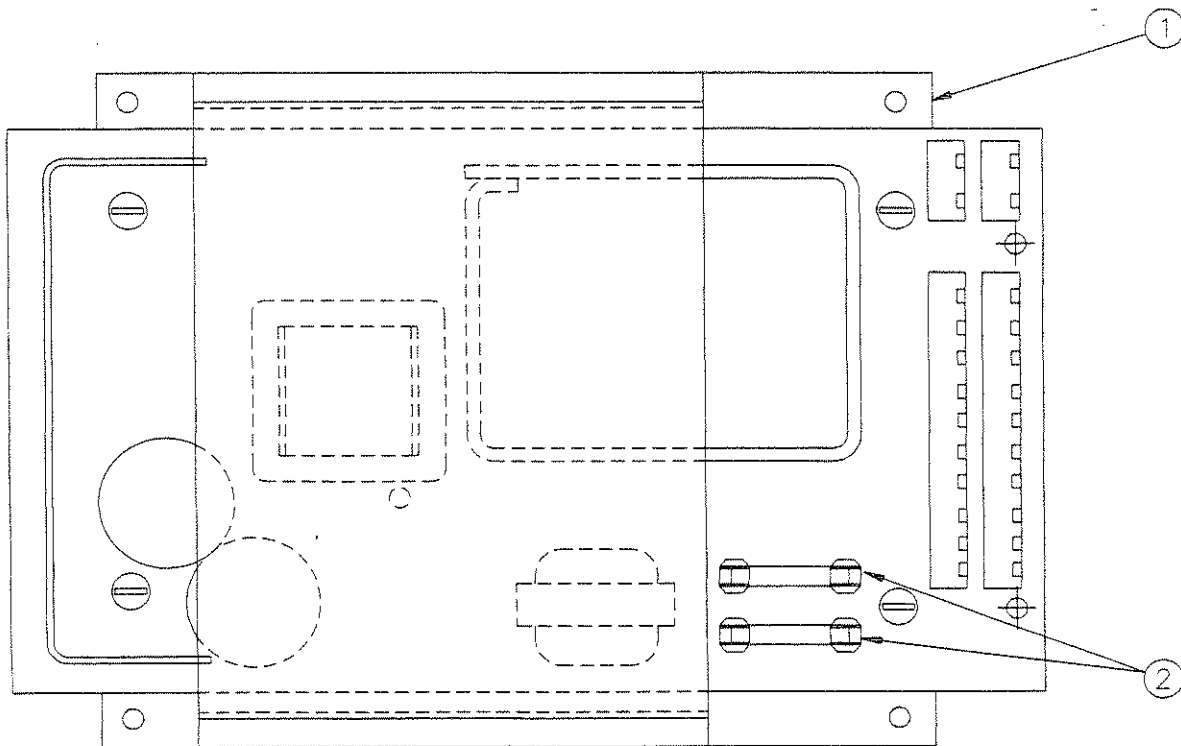


**Figure 9-20. Main Electrical Box, 208-480-380/400/415V
(Unit with Exhaust Fan, Drying and Neutralizing System)**

FIG. & ITEM NO.	PART NUMBER			S V C	DESCRIPTION	UNITS PER ASSEMBLY		
9-20					MAIN ELECTRICAL BOX, 208-480-380/400/415V			
					208 V	X		
					480 V		X	
					380/400/415 V			X
1	P	117989	153		Electric Box	1	1	1
2	P	117996	810		Inner Panel, Electric Box	1	1	1
3	P	117909	918	X	Contactor	1		
	P	117902	260	X	Contactor		1	1
4	P	117909	937	X	Relay, Overload	1		
	P	117902	263	X	Relay, Overload		1	1
5	P	117909	288	X	Contactor	1	1	1
6	P	117909	919	X	Relay, Overload	1		
	P	117909	012	X	Relay, Overload		1	1
7	P	117909	288	X	Contactor	1	1	1
8	P	117909	012	X	Relay, Overload	1		
	P	117909	290	X	Relay, Overload		1	1
9	P	117909	288	X	Contactor	1	1	1
10	P	117909	919	X	Relay, Overload	1		
	P	117909	423	X	Relay, Overload		1	1
11	P	117909	288	X	Contactor	1	1	1
12	P	117909	290	X	Relay, Overload	1		
	P	117910	182	X	Relay, Overload		1	1
13	P	117909	797	X	Holder, Fuse	1		
	P	117909	751	X	Fuse Holder, 3P 30A 600V		1	1
14	P	117909	939	X	Fuse, 40 A, 600 V	3		
	P	117909	741	X	Fuse, 17.5 A, 600 V		3	
	P	117903	630	X	Fuse, 25 A, 600 V			3
15	P	117909	798	X	Fuse Cover	3		
	P	117909	775	X	Cover Puller		3	3
16	P	117909	751	X	Fuse Holder	1	1	1
17	P	117909	938	X	Fuse, 12 A, 600 V	3		
	P	117903	070	X	Fuse, 6 A, 600 V		3	
	P	117909	964	X	Fuse, 7A, 600 V			3
18	P	117909	775	X	Cover Puller	3	3	3
19	P	117909	751	X	Fuse Holder	1	1	1
20	P	117903	299	X	Fuse, 8 A, 600 V	3		
	P	117909	034	X	Fuse, 5 A, 600 V		3	3
21	P	117909	775	X	Cover Puller	3	3	3
22	P	117909	751	X	Fuse Holder	1	1	1
23	P	117902	669	X	Fuse, 15 A, 600 V	3		
	P	117909	964	X	Fuse, 7 A, 600 V		3	
	P	117903	070	X	Fuse, 6 A, 600 V			3
24	P	117909	775	X	Cover Puller	3	3	3
25	P	117909	751	X	Fuse Holder 3P 30A 600V	1	1	1
26	P	117909	963	X	Fuse, 2.5 A, 600 V	3		
	P	117903	408	X	Fuse, 1.5 A, 600 V		3	3
27	P	117909	775	X	Cover Puller	3	3	3
28	P	117910	671	X	Fuse Holder	1	1	1
29	P	117909	938	X	Fuse, 12 A, 600 V	2		
	P	117909	034	X	Fuse, 5 A, 600 V		2	
	P	117903	070	X	Fuse, 6 A, 600 V			2
30	P	117909	775	X	Cover, Puller	2	2	2
31	P	117909	789	X	Terminal, Ground	1	1	1
32	P	117909	788	X	Terminal,	6	6	6
33	P	117909	799		Bar, Jumper	3	3	3
34	P	117909	792		Hub Cap	3	3	3
35	P	117902	664		End Stop	A/R	A/R	A/R

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FIG. & ITEM NO.	PART NUMBER			S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-20					MAIN ELECTRICAL BOX, 208-480-380/400/415V				
					208 V	X			
					480 V		X		
					380/400/415 V			X	
36	P	117909	756	X	Transformer 1 KVA	1	1		
	P	117907	268	X	Transformer 1KVA			1	
37	P	117909	803	X	Cover Transformer Terminals	2	2	2	
38	P	117996	789		Shelf Card Exp S/S, Side	2	2	2	
39	P	117996	790		Bracket LH/RH Exp S/S, End	2	2	2	
40	P	117997	098	X	Guide, Power Supply	1	1	1	
41	P	117909	439	X	Stage 4, Backplane Century Exp	1	1	1	
42	P				Power Supply (see Figure 9-20a)	1	1	1	
43	P				Control Board (see Figure 9-20b)	1	1	1	
44	P				I/O Board (see Figure 9-20c)	3	3	3	
45	P	117909	447	X	Harness Ass'y Exp J3A/J15A	1	1	1	
46	P	117909	448	X	Harness Ass'y Exp J3B/J15B	1	1	1	
47	P	117909	446	X	Harness Ass'y Exp J4/J16	1	1	1	
48	P	117909	445	X	Stage 4, Guide Card	14	14	14	
49	P	117908	803	X	Line Filter 120 V	1	1	1	
50	P	117909	796	X	Fuse Holder	3	3	3	
51	P	117951	583	X	Fuse, 6.25 A, 250 V	1	1	1	
52	P	117909	744	X	Fuse, 3 A, 250 V	1	1	1	
53	P	117901	328	X	Fuse, 5 A, 250 V	1	1	1	
54	P	117909	794		Hub Cap	1	1	1	
55	P	117909	791	X	Terminal, Ground, 2 Stages	2	2	2	
56	P	117909	795		Hub Cap	1	1	1	
57	P	117909	790	X	Terminal, Blue, 2 Stages	2	2	2	
58	P	117902	422	X	Terminal, Gray, 2 Stages	9	9	9	
59	P	117902	662		Bar, Jumper 10 Poles	A/R	A/R	A/R	
60	P	117909	793		Hub Cap	1	1	1	
61	P	117902	421	X	Relay SPDT	6	6	6	
62	P	117910	354	X	Isolating Interface (Neutralizing System Option)	1	1	1	
63	P	117997	712		Support, Wire Duct, 2-3/4"	A/R	A/R	A/R	
64	P	117910	050		Spacer, Printed Circuit, 4-40 x 3/16" AMP	12	12	12	
65	P	117910	143		Hinges, Cover (Not shown)	2	2	2	
66	P	117910	457	X	Gasket, Cover (Not shown)	1	1	1	



REF.: #122-998-073

Figure 9-20a. Power Supply

FIG. & ITEM NO.	PART NUMBER			S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-20a					POWER SUPPLY	X			
1	P	117909	440	X	Power Supply Ass'y	1			
2	P	117955	573	X	• Fuse, 4A, 250V	2			

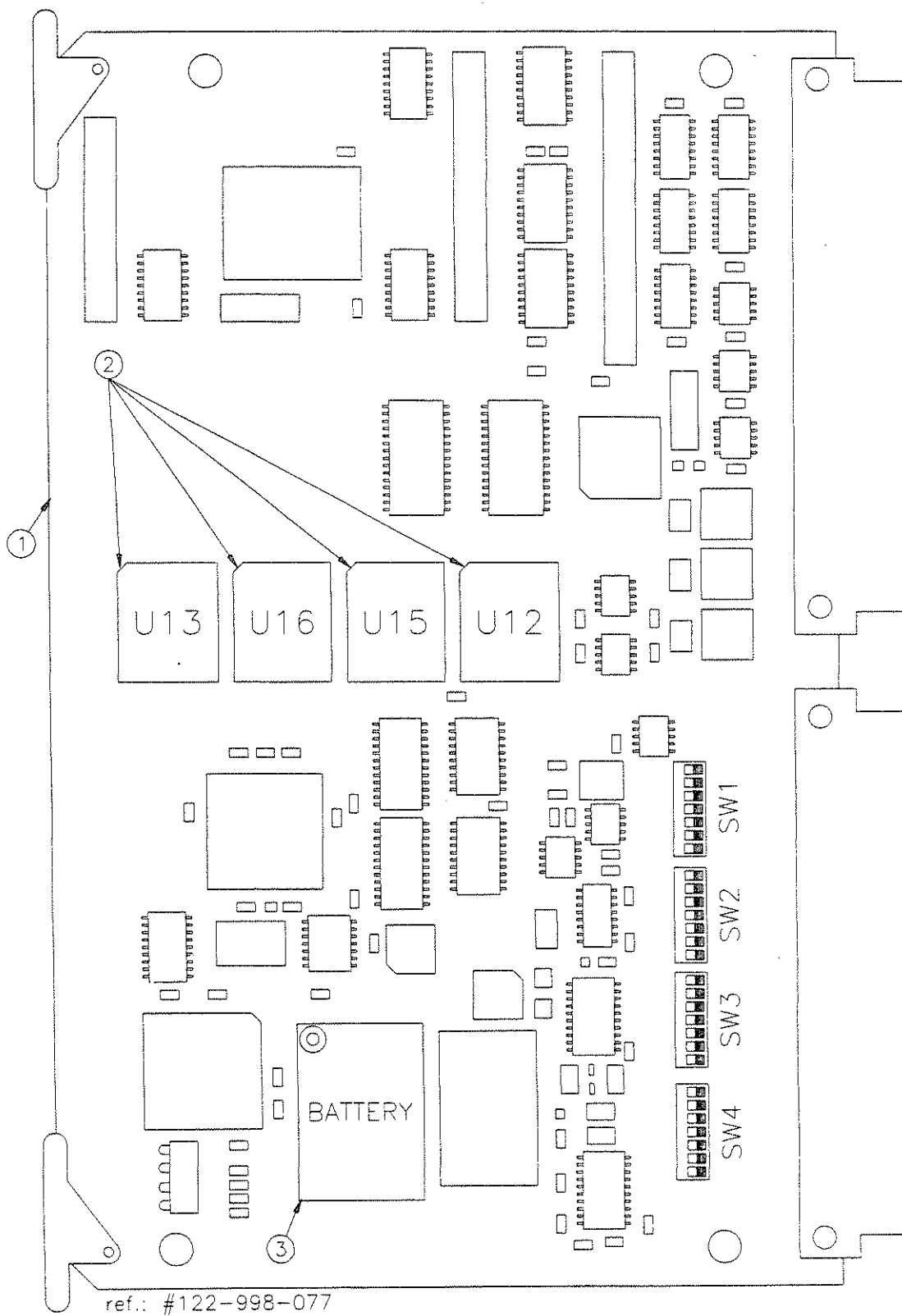


Figure 9-20b. Control Board

FIG. & ITEM NO.	PART NUMBER			S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-20b					CONTROL BOARD	X			
1	P	117909	441	X	Control Board Ass'y	1			
2	P	*		X	• Eprom (2 Pair)	1			
3	P	93915	047	X	• Battery Back-Up	1			
* NOTE: When ordering a replacement Eprom chip, refer to part number printed on existing chip.									

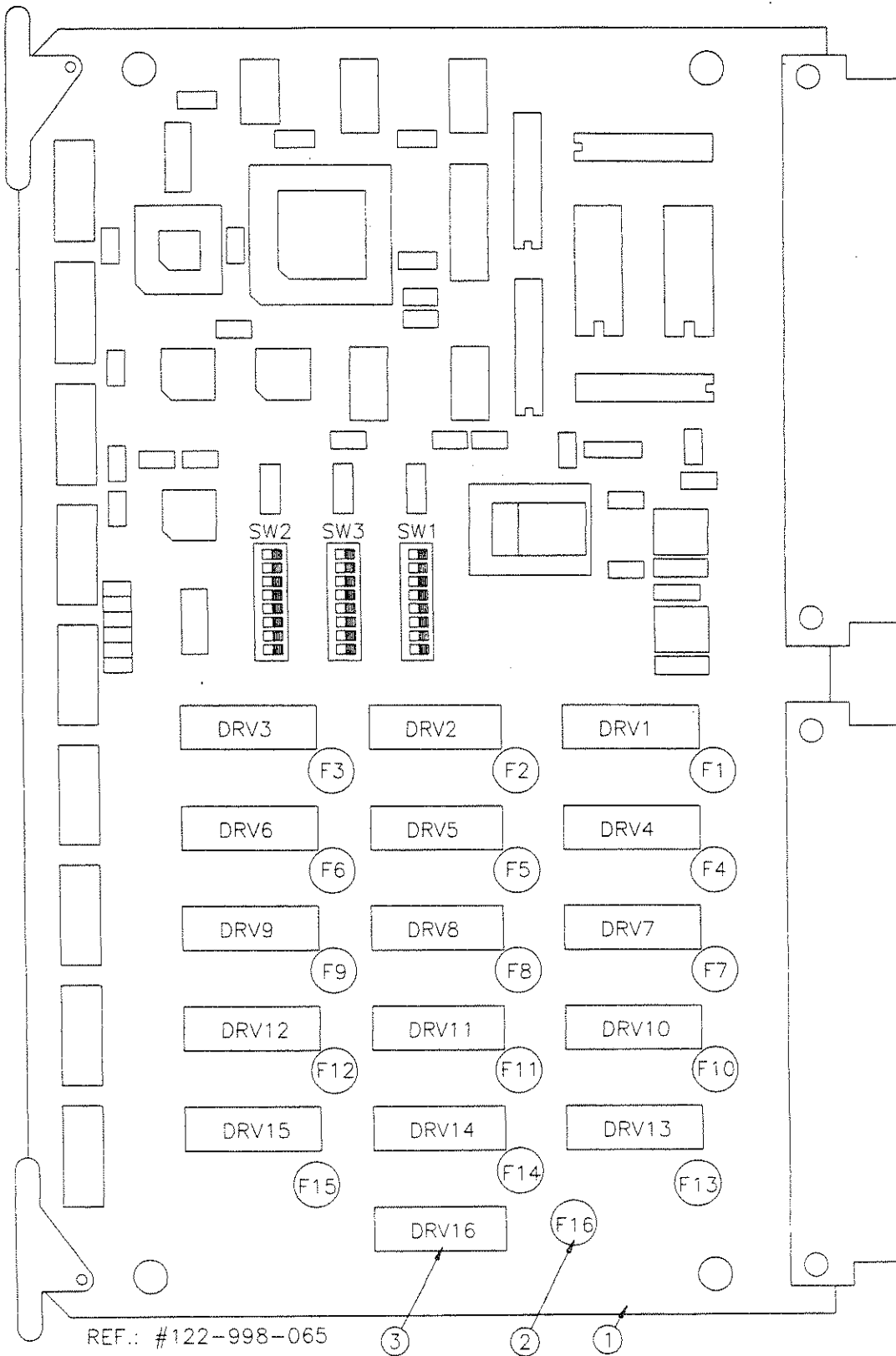


Figure 9-20c. I/O Board, Card

FIG. & ITEM NO.	PART NUMBER			S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-20c					I/O BOARD, CARD	X			
1	P	117909	442	X	I/O Board Ass'y	3			
2	P	117910	184	X	• Fuse, 0.8A, 250V	16			
3	P	117902	412	X	• Relay, Dip	16			

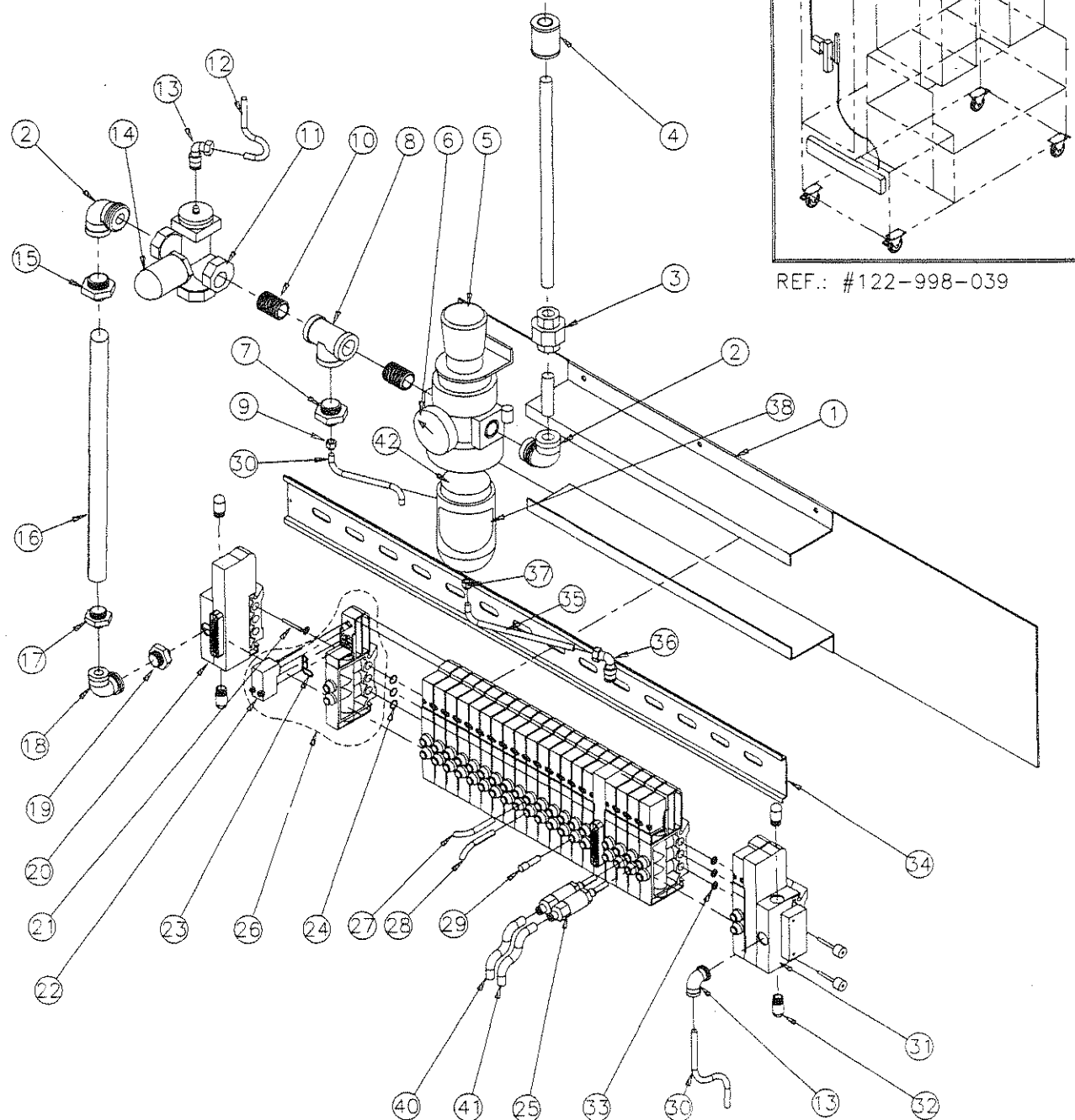


Figure 9-21. Compressed Air Inlet & Pneumatic Block Valve

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY
9-21			COMPRESSED AIR INLET & PNEUMATIC BLOCK VALVE	X
1	117997	710	X Support Pneumatic Block	2
2	117952	106	Elbow, Brass, 90°, 1/2" M x 1/2" F	2
3	117952	176	X Union, Brass, 1/2" F	1
4	117952	162	Coupling, Brass, 1/2" F	1
5	117909	501	X Pressure Regulator	1
6	117941	657	Pressure Gauge, 0-160 PSI 1/4"	1
7	117952	186	Adapter, 1/2NPT m x 1/4 NPT f	1
8	117952	139	X Tee, Brass, 1/2" F x 1/2" F x 1/2" F	1
9	117955	493	X Adapter, Pneumatic, 1/4" M x 1/4" OD	1
10	117952	051	X Nipple, Brass, 1/2", Closed	2
11	117909	502	X Valve, Pneumatic, 3W A1 1/2" F	1
12	117955	228	X Tubing, Air, 1/4", Polyethylene, Red	A/R
13	117955	494	X Elbow, Pneumatic, 90°, 1/4" M x 1/4" OD	2
14	117910	077	X Muffler, Air Valve, 1/2"	1
15	117909	716	X Adapter, Pneumatic, 1/2" M x 1/2" Hose	1
16	117909	715	X Hose, Air, 1/2", Black	A/R
17	117909	717	X Adapter, Pneumatic, 1/4" M x 1/2" Hose	1
18	117958	728	X Connector, Elbow, 90°, 1/4" F x 1/4" F	1
19	117940	197	Nipple, Brass, 1/4" x 1-1/2"	1
20	117909	461	X Receptacle DB25 Male/Pneu	2
21	117997	341	X Cross Rod Chromed, Pneumatic Valve	42
22	117909	459	X Coil 110V	21
23	117998	778	X Seal, Spool Pneumatic Valve	21
24	117997	004	X O'Ring, Pneumatic Valve.	66
25	117910	156	X Fitting, Pneumatic, 1/4" FIT x 3/8" OD	2
26	117998	074	X Valve, Pneumatic, Spool & Gaskets	21
27	117955	229	X Tubing, Air, 1/4", Polyethylene, Blue	A/R
28	117955	228	X Tubing, Air, 1/4", Polyethylene, Red	A/R
29	117906	759	X Plug, Pneumatic, 1/4"	A/R
30	117955	228	X Tubing, Air, 1/4", Polyethylene, Red	1
31	117909	460	X End Plate, Pneumatic Base	1
32	117955	130	X Muffler, Air 1/4"	4
33	117909	725	X Plug (Kit)	1
34	117954	400	Track, Terminal, 35mm, 22" Lg	1
35	117950	545	X Hose, Air, 1/4" Polyethylene, White	1
36	117951	837	X Elbow, Pneumatic, 90°, 1/8" ORB x 1/4" OD	1
37	117951	836	X Adapter, Pneumatic, 1/8" x 1/4" OD	1
38	117955	410	X Valve, Automatic Drain	1
39	117998	372	Washer Chamber Pneumatic Hoses Ass'y (Not shown)	1
40	117909	861	X Hose, Air, 3/8" Polyethylene Blue	A/R
41	117907	354	X Hose, Air, 3/8", Polyethylene, Red	A/R
42	117911	343	Filter, #PS801P, for Regulator 909-501	

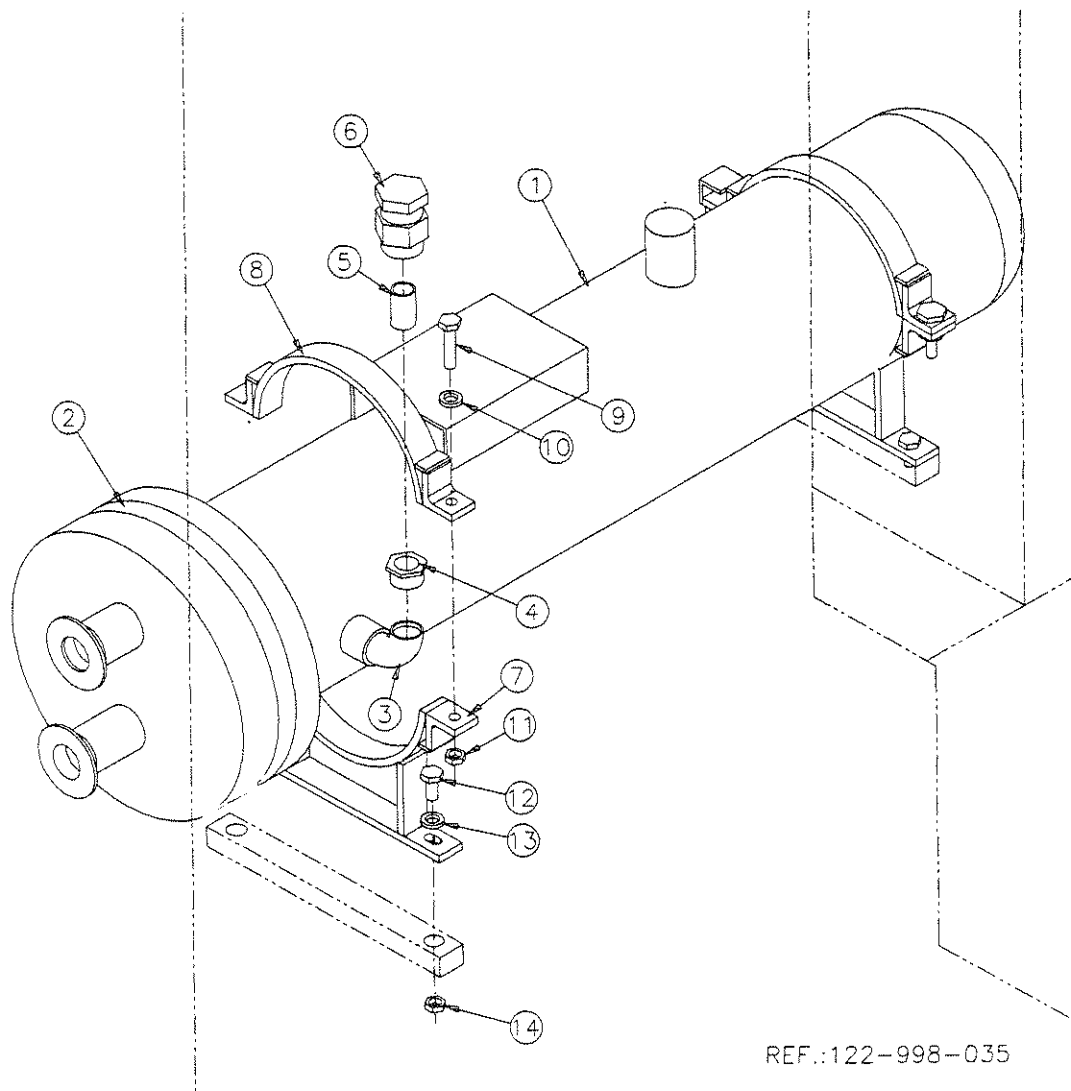
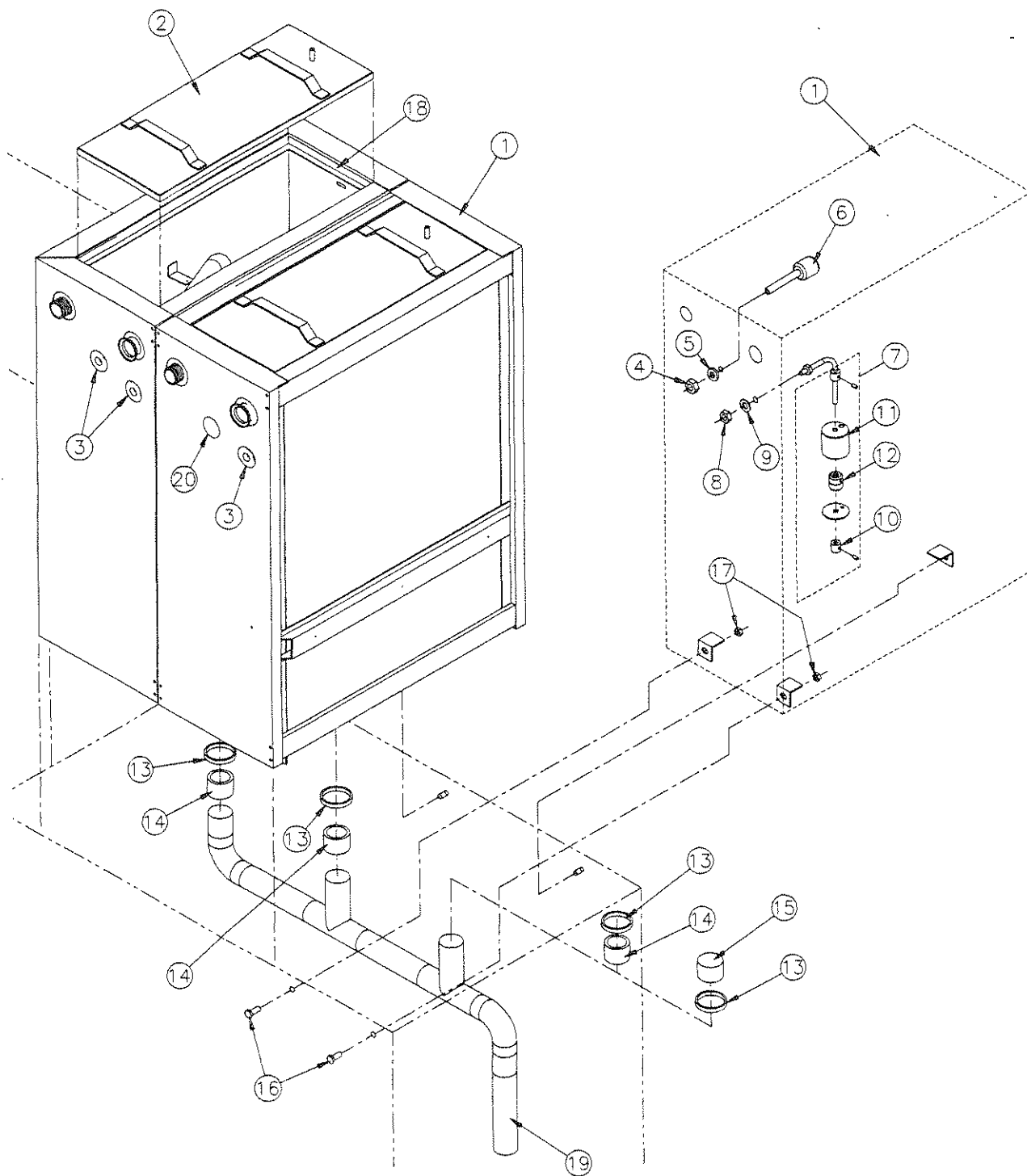


Figure 9-22. Heat Exchanger Assembly

FIG. & ITEM NO.	PART NUMBER			S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-22					HEAT EXCHANGER ASS'Y				
1	117909	386	X		Heat Exchanger	1			
2	117910	413	X		Gasket, Heat Exchanger (1 pair)	1			
3	117952	115			Elbow, Brass, 90°, 3/4"M x 3/4"F	1			
4	117952	190			Adapter, Brass, 3/4"M x 1/2"F	1			
5	117952	061			Nipple, Brass, 1/2" x 6"	1			
6	117940	073	X		Vacuum Breaker, 1/2"	1			
7	117997	316			Support, Bottom, Heat Exchanger	2			
8	117997	321			Support, Top Heat Exchanger	2			
9	117950	912			Bolt, S/S, 5/16-18 x 2-1/2"	4			
10	117950	977			Washer, S/S, 5/16"	4			
11	117950	954			Nut, S/S, 5/16-18	4			
12	117950	905			Bolt, S/S, 5/16-18 x 3/4"	4			
13	117950	977			Washer, S/S, 5/16"	4			
14	117950	954			Nut, S/S, 5/16-18	4			



REF.:#122-998-032

Figure 9-23. Chemical Tanks Assembly

FIG. & ITEM NO.	PART NUMBER		S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-23				CHEMICAL TANKS (1 & 2) ASS'Y	X			
				ADDITIONAL WASH TANK (3)		X		
1				Tank, Solution Ass'y (Insulated)	2	3		
2	117996	374	X	Cover, Tank	2	3		
3	117997	962	X	Plug, Nylon, Modified for Tank	3	5		
4	117954	310	X	Nut, UHMW	1	2		
5	117950	388	X	O'Ring, Guide Exterior, 5/8"OD x 7/16"ID	1	2		
6	117997	515	X	Injector, 1/4"ID for 3/8" Hose	1	2		
7	117905	655	X	Sensor, Water Level with Cover	2	3		
8	117950	955		Nut, S/S, 3/8-16	2	3		
9	117902	479	X	Gasket, Water Level Sensor	2	3		
10	117906	325	X	Collar, Water Level Sensor, 316L, Ass'y	4	6		
	117906	374		Screw, S/S, 316L, Socket ST 6-32 x 1/8" Cup (Not shown)	4	6		
	117906	995	X	Collar, Water Level Sensor, 316L (Not shown)	4	6		
11	117902	275	X	Cover, Water Level Sensor Protection	2	3		
12	117903	115	X	Water Level, Tank, without Cover	2	3		
13	117950	791	X	Clamp, S/S, #52 2-13/16" x 3-3/4"	6	6		
14	117950	688	X	Hose, 2" x 2-1/4", Black	3	3		
15	117955	369		Plug (if additional wash tank is not selected)	1			
16	117950	910		Bolt, S/S, 5/16-18 x 2"	4	6		
17	117950	954		Nut, S/S, 5/16-18	4	6		
18	117996	399	X	Gasket, Tank Cover	2	3		
19	117996	347		Piping, Tank Overflow	1	1		
20	117909	483	X	Plug, Nylon for 1-3/4" Hole	1	1		

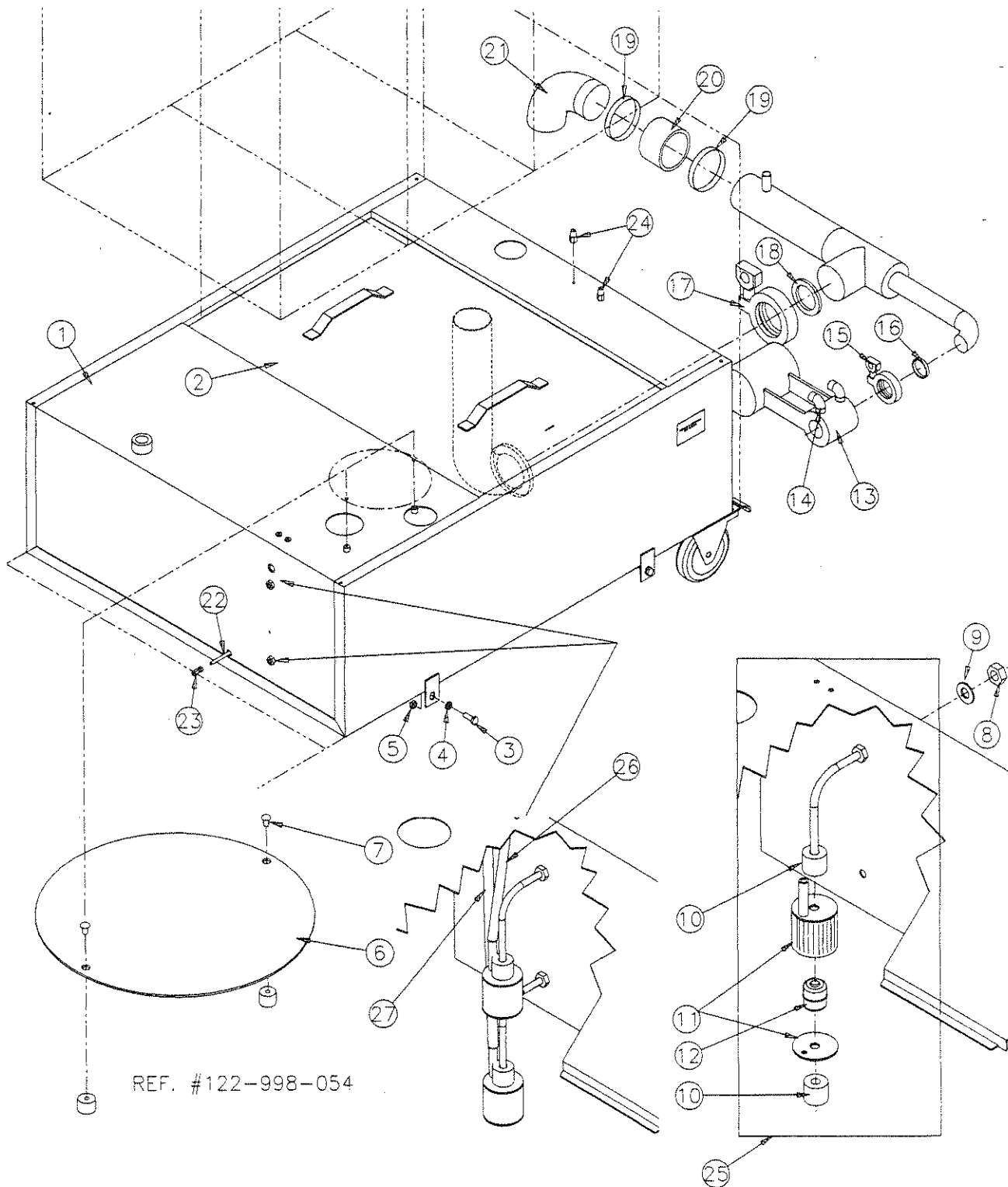
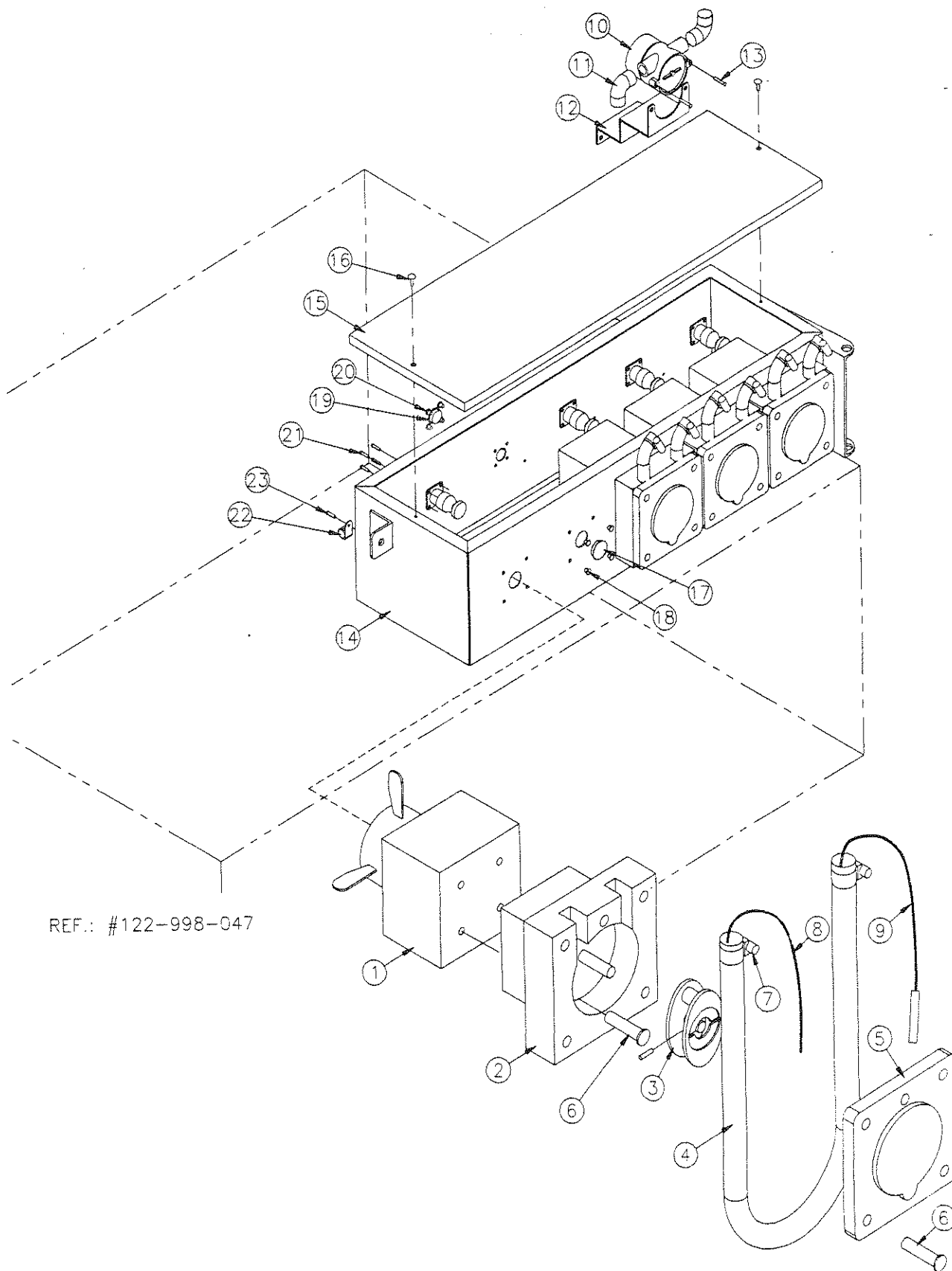


Figure 9-24. Cooldown Tank Assembly

FIG. & ITEM NO.	PART NUMBER		S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-24				COOLDOWN TANK ASS'Y				
1	117996	780		Tank, Cooldown, EPO	1			
2	117996	700	X	Cover, Tank, Cooldown	1			
3	117950	911		Bolt, S/S, 5/16-18 x 2-1/4"	2			
4	117950	977		Washer, S/S, 5/16"	2			
5	117950	954		Nut, S/S, 5/16-18	2			
6	117997	730	X	Suction Plate, Neutralization Pump	1			
7	117950	855		Screw, Truss Head, S/S, 8-32 x 1/4"	2			
8	117950	955		Nut, S/S, 3/8-16	2			
9	117902	479	X	Gasket, Water Level Sensor	2			
10	117906	325	X	Collar, Water Level Sensor, 316L Ass'y	4			
	117906	374		Screw, S/S, 316L, Socket ST 6-32 x 1/8" Cup	4			
	117906	995	X	Collar, Water Level Sensor, 316L	4			
11	117997	715	X	Slosh Shield, Perforated, Water Level	2			
	117997	530	X	Cover, Slosh Shield, Water Level	2			
12	117903	115	X	Sensor, Water Level without Cover	2			
13	117997	590	X	Valve, Recirculation, Pneumatic, 1-1/2" Ass'y	1			
14	117951	837	X	Elbow, Pneumatic, 90°, 1/8" ORB x 1/4"OD	2			
15	117951	196	X	Clamp, Quick Disconnect 1-1/2"	1			
16	117951	651	X	Gasket, Viton, 1-1/2"	1			
17	117951	387	X	Clamp, Quick Disconnect, 3"	1			
18	117954	006	X	Gasket, Viton, 3"	1			
19	117950	791	X	Clamp, S/S, #52 2-13/16" x 3-3/4"	2			
20	117950	667	X	Hose, 3" x 2-1/4", Black	1			
21	117997	755		Piping Drain with Cooldown Tank	1			
22	117955	383	X	RTD Assembly with Connector	1			
23	117955	591	X	Fitting, Compression, RTD	1			
24	117955	498	X	Connector Straight, 1/4"M x 3/8"OD (When pH Neutralizing System Present)	2			
25	117003	429		Sensor, Water Level with cover	2			
26	117005	881		Hose, Silicon, 3/8" x 4-1/4", water level	1			
27	117005	880		Hose, Silicon, 3/8" x 11-1/4", water level	1			



REF.: #122-998-047

Figure 9-25. Chemical Pump Box Assembly

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-25			CHEMICAL PUMP BOX ASS'Y				
			Basic Unit	X			
			Additional Wash Tank		X		
			pH Neutralization System			X	
1	117950	585	X Motor, Peristaltic Pump	1	1	2	
2	117950	602	X Pump, Peristaltic (Head Kit)	1	1	2	
3	117950	601	X Block, Roller, Ass'y	1	1	2	
	117908	217	X Kit, Peristaltic Pump Repair (Not shown) Includes	A/R	A/R	A/R	
			• Block, Roller, Ass'y				
			• Lubricant, Peristaltic Pump				
4	117952	346	X Tubing, 3/8"ID x 5/8"OD	1	1	2	
5	117950	600	X Cover, Large Peristaltic Pump	1	1	2	
6	117950	836	Screw, Truss Head, S/S, 10-32 x 1/2"	9	9	18	
7	117950	783	X Clamp, S/S, #4 1/4" x 5/8"	2	2	4	
8	117909	861	X Hose, Air, 3/8", Polyethylene, Blue (Pump Outlet)	A/R			
	117907	354	X Hose, Air, 3/8", Polyethylene, Red		A/R		
	117955	491	X Hose, Poly-Flow, 3/8"OD, Black			A/R	
	117955	246	X Tubing, 3/8"OD, Translucent			A/R	
9	117997	789	X Suction Tube, 18", with Blue Hose 3/8" x 50'	1			
	117996	313	X Suction Tube, 18", with Red Hose 3/8" x 50'		1		
	117996	314	X Suction Tube, 18", with White Hose 3/8" x 50'			1	
	117997	704	X Suction Tube, 18", with Black Hose 3/8" x 50'			1	
10	117997	309	X Flowmeter, Chemical Ass'y	1	1		
11	117909	933	X Elbow, Compression, Plastic, 1/4"M x 3/8"OD	2	2		
12	117996	796	X Support, Detergent Flowmeter	1	1		
13	117950	858	Screw, Truss Head, S/S, 8-32 x 3/4"	2	2		
14	117996	792	Box, Detergent Injection Pump	1			
15	117997	577	X Cover, Box, Detergent Injection	1			
16	117950	855	Screw, Truss Head, S/S, 8-32 x 1/4"	2			
17	117954	629	X Plug, Plated, 7/8"	A/R	A/R	A/R	
18	117954	637	Plug, Steel, Plate, 3/16"	A/R	A/R	A/R	
19	117954	633	Plug, Steel, Plate, 11/16"	A/R	A/R	A/R	
20	117954	637	Plug, Steel, Plate, 3/16"	A/R	A/R	A/R	
21	117950	855	Screw, Truss Head, S/S, 8-32 x 1/4"	A/R	A/R	A/R	
22	117953	855	X Clamp, Cable, 1/2"	A/R	A/R	A/R	
23	117950	856	Screw, Truss Head, S/S, 8-32 x 3/8"	A/R	A/R	A/R	
	117950	599	X Lubricant, Peristaltic Pump (Not shown)	A/R			

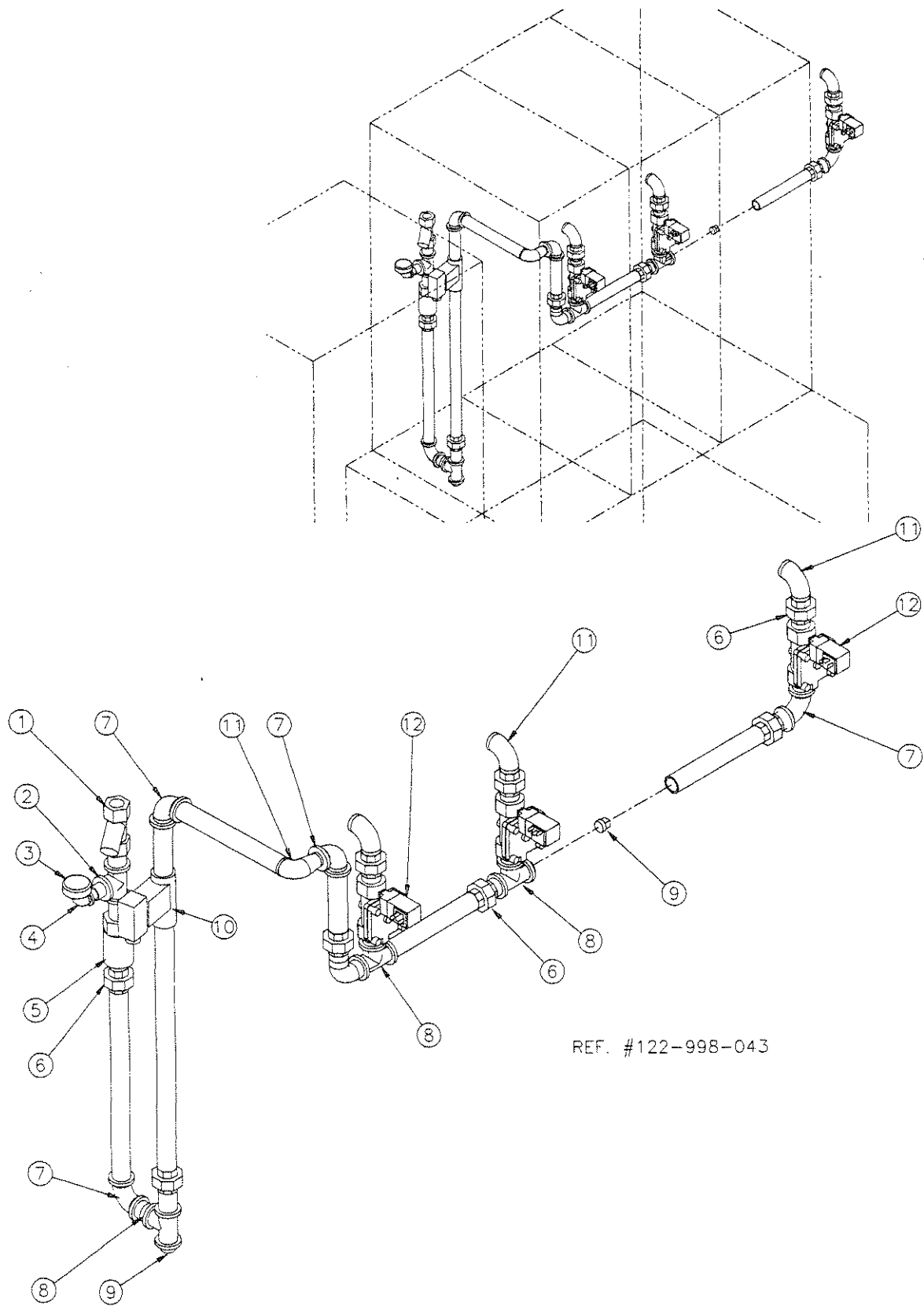
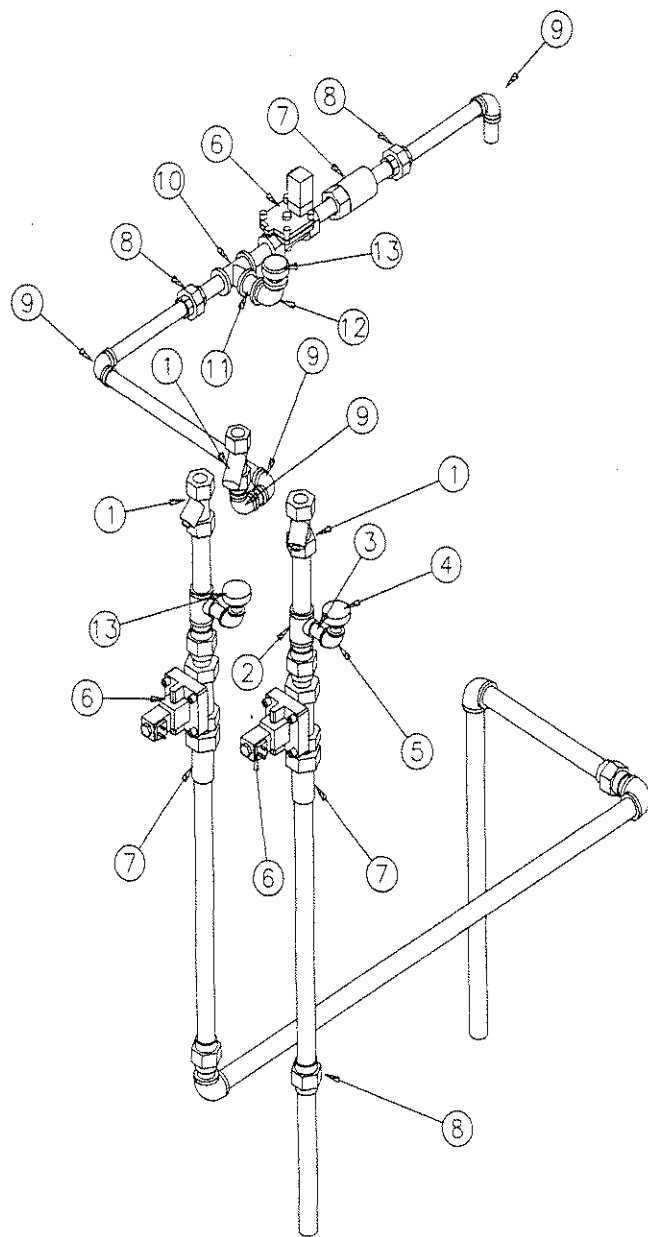
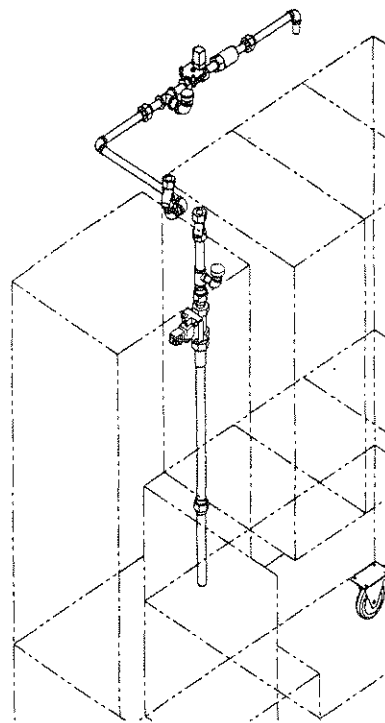


Figure 9-26. Hot Water Supply Piping

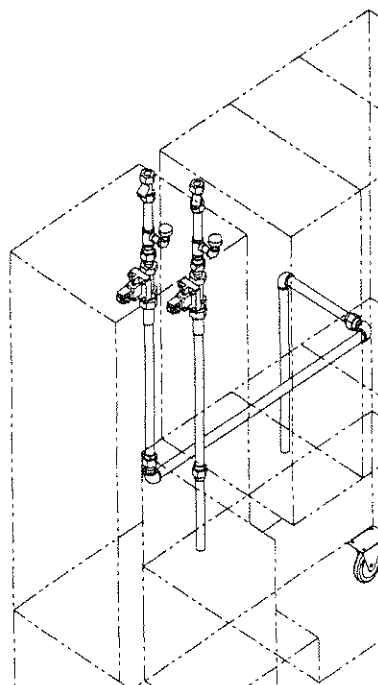
FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-26			HOT WATER SUPPLY PIPING (STD)	X			
			HOT WATER SUPPLY PIPING WITH ADDITIONAL WASH TANK		X		
1	117950	205	X Strainer, Brz, 1"F Water	1	1		
2	117952	145	Tee, Brass, 1"F x 1"F x 1/2"F	1	1		
3	117951	541	X Breaker, Vacuum, 1/2"	1	1		
4	117952	105	X Elbow, 1/2 NPT f x 1/2 NPT f	1	1		
5	117909	703	X Valve (Check) Brass 1"F Ball Cone	1	1		
6	117952	179	Union, Brass, 1"F	1	1		
7	117952	122	Elbow, Brass, 90°, 1"F x 1"F	6	8		
8	117952	148	Tee, Brass, 1"F x 1"F x 1"F	3	4		
9	117952	214	Pipe Plug, Brass, 1"M	3	3		
10	117995	718	X Flowmeter Burkert 1" Ass'y	2	1		
11	117952	123	Elbow, Brass, 90°, 1"M x 1"F	1	1		
12	117997	376	X Valve, Water, Brass, 1"F	4	5		
	117910	412	X Kit, Water Valve Repair (Not shown)	2	3		



REF. #122-998-052



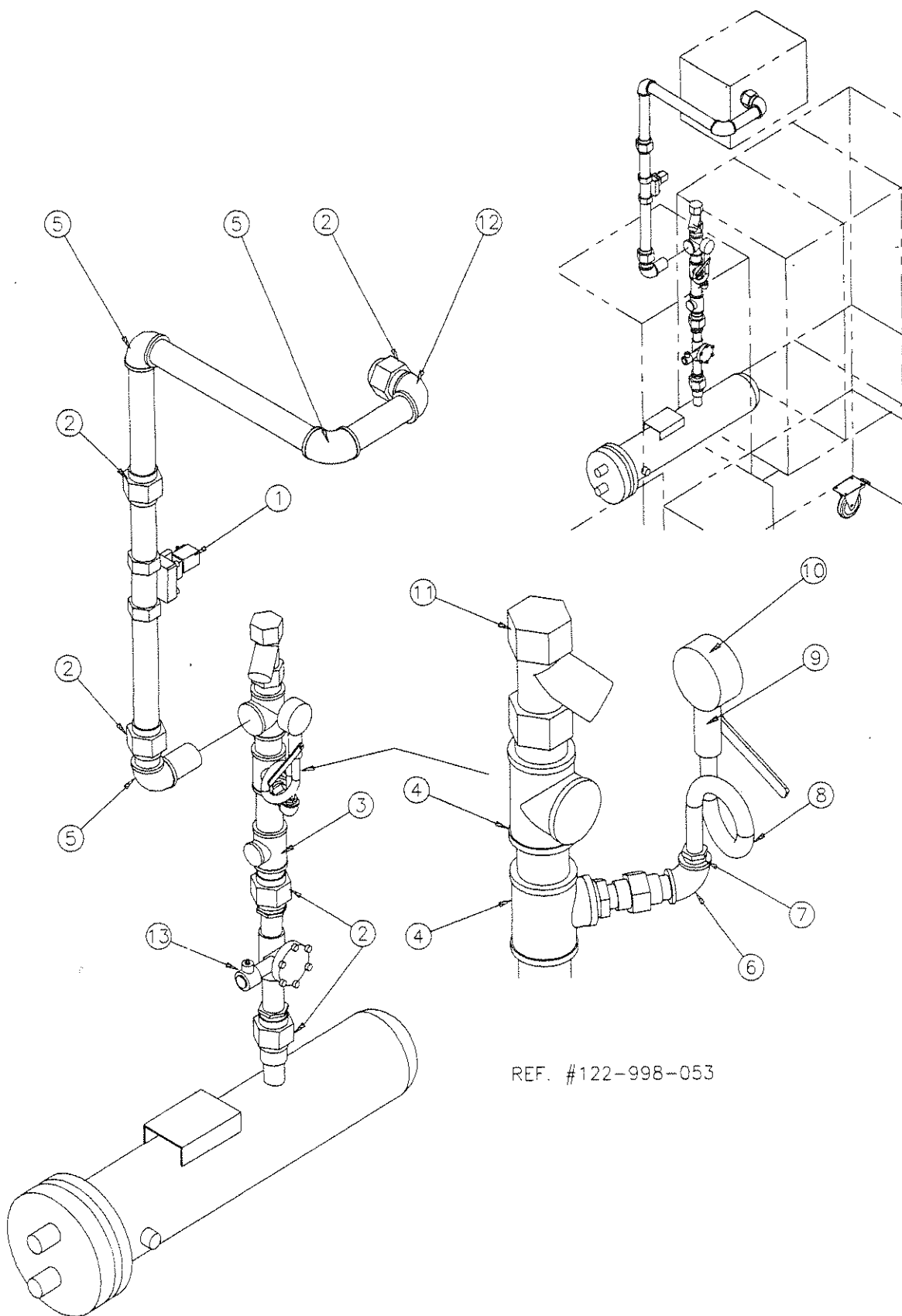
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**Figure 9-27. Cold Water Supply Piping Assembly
Drain Discharge Cooldown or pH Neutralizing (Cooldown Tank),
Direct Cold Water Injection**

FIG. & ITEM NO.	PART NUMBER		S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-27				COLD WATER SUPPLY PIPING ASS'Y DRAIN DISCHARGE COOLDOWN OR pH NEUTRALIZING X DIRECT COLD WATER INJECTION X				
1	117950	205	X	Strainer, Brz, 1"F Water	1	1		
2	117952	148		Tee, Brass, 1"F x 1"F x 1"F	1	-		
3	117952	193		Reducing Bushing, Brass, 1"M x 1/2"F	1			
4	117951	541	X	Breaker, Vacuum, 1/2"	1			
5	117952	105	X	Elbow, 1/2"NPT f x 1/2"NPT f	1			
6	117997	376	X	Valve, Water, Brass, 1"F	1	1		
	117910	412	X	Kit, Water Valve Repair (Not shown)				
7	117909	703	X	Valve (Check) Brass 1"F Ball Cone	1	1		
8	117952	179		Union, Brass, 1"F	2	2		
9	117952	122		Elbow, Brass, 90°, 1"F x 1"F		4		
10	117952	148		Tee, Brass, 1"F x 1"F x 1"F		1		
11	117952	194		Reducing Bushing, Brass, 1"M x 3/4"F		1		
12	117952	114		Elbow, Brass, 90°, 3/4"F x 3/4"F		1		
13	117904	568		Breaker, Vacuum, 3/4"		1		



REF. #122-998-053

Figure 9-28. Steam Supply Piping

FIG. & ITEM NO.	PART NUMBER			S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-28					MAIN STEAM SUPPLY PIPING Booster In-Line (STD) Drying Option (OPTIONAL)	X		X	
1	117997	373	X		Valve, Steam, Cu, 1-1/4" Connection			1	
	117910	411	X		Kit, Steam Valve Repair (Not shown)				
2	117952	181			Union, Brass, 1-1/2"F	2		3	
3	117952	145			Tee, Brass, 1"F x 1"F x 1/2"F	1			
4	117952	152			Tee, Brass, 1-1/2"F x 1-1/2"F x 1-1/2"F	2			
5	117952	130			Elbow, Brass, 90°, 1-1/2"F x 1-1/2"F			3	
6	117952	105	X		Elbow, 1/2NPT f x 1/2NPT f	1			
7	117952	186	X		Adapter, 1/2 NPT m x 1/4 NPT f	1			
8	117940	068			Pigtail Syphon, Iron, 1/4"NPT	1			
9	117940	083			Ball Valve, Brass, 1/4" NPT	1			
10	117959	340	X		Pressure Gauge 1/4"NPT	1			
11	117950	192	X		Strainer, Brz, 1-1/2"F Steam	1			
12	117952	133			Elbow, Brass, 90°, 1-1/2"M x 1-1/2"F			1	
13	117911	035	X		Valve, Steam, Cu 1-1/4 "F	1			
	117951	000	X		Kit, Steam Valve Repair (Not Shown)				

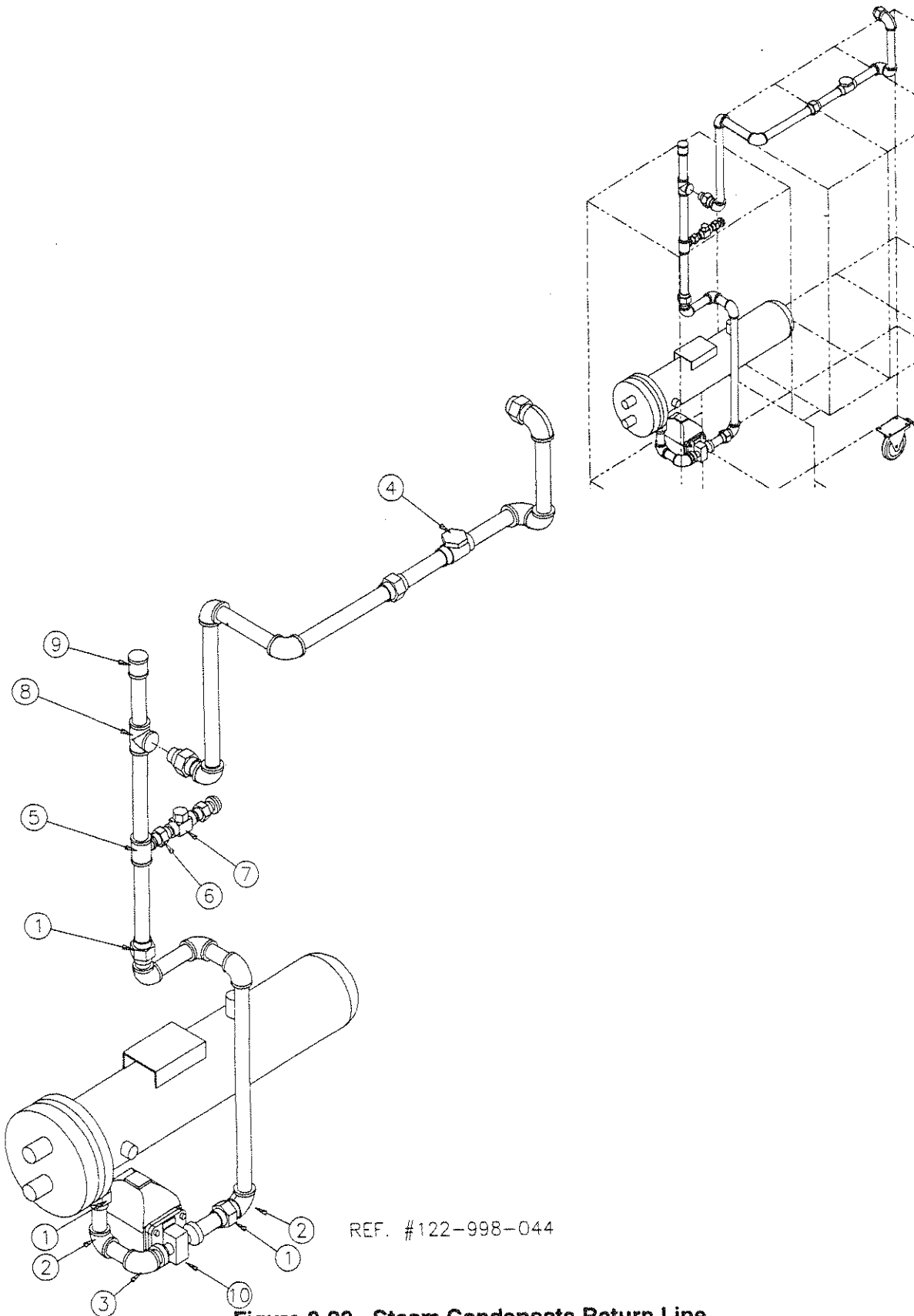


Figure 9-29. Steam Condensate Return Line

FIG. & ITEM NO.	PART NUMBER		S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-29				STEAM CONDENSATE RETURN LINE HEAT EXCHANGER	X			
				DRYING STEAM CONDENSATE PIPING		X		
1	117952	179		Union, Brass, 1"F	3	3		
2	117952	122		Elbow, Brass, 90°, 1"F x 1"F	5	3		
3	117952	123		Elbow, Brass, 90°, 1"M x 2"F	2	1		
4	117950	198	X	Trap, Steam, 1"	1			
5	117952	145		Tee, Brass, 1"F x 1"F x 1/2"F	1			
6	117952	176	X	Union, Brass, 1/2"F	2			
7	117950	182	X	Trap, Steam, 1/2"	1			
8	117952	148		Tee, Brass, 1"F x 1"F x 1"F	1			
9	117952	164		Coupling, Brass, 1"F	1			
10	117911	036		Trap, Steam, 1" FT 14 HC		1		
	117909	153		Repair Kit, 3 Gasket Set, for Steam Trap (not shown)				
	117909	154		Repair Kit, Main Valve, Assembly with Float (not shown)				

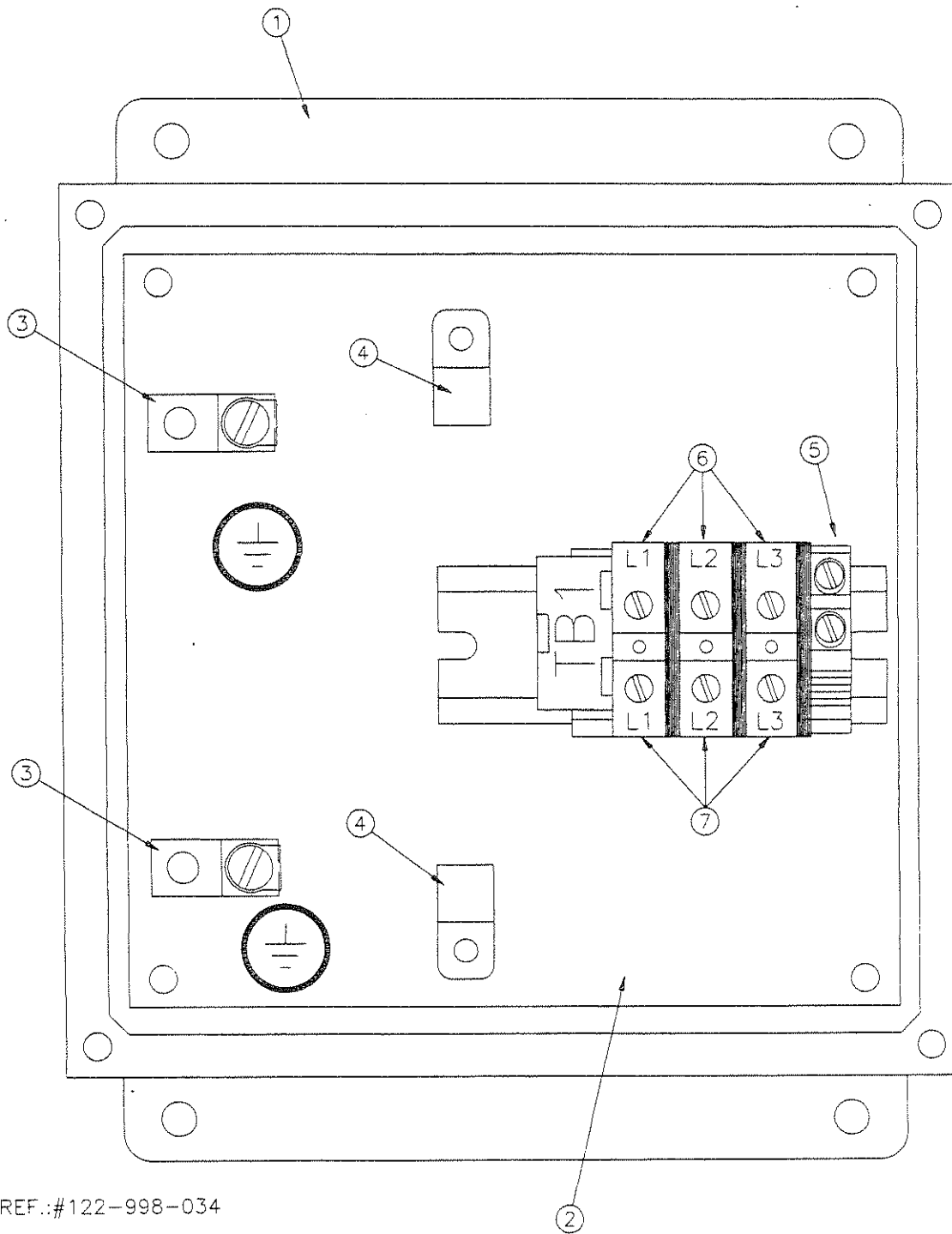


Figure 9-30. Box, Electric, Assembly, Customer Connections

FIG. & ITEM NO.	PART NUMBER			S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-30					BOX, ELECTRIC, ASS'Y, CUSTOMER CONNECTIONS	X			
1	P	117941	340		Box, Screw Cover, 8" x 8" x 4"	1			
2	P	117941	341		Inner Panel, 8" x 8"	1			
3	P	117909	949	X	Connector, Ground	2			
4	P	117958	669		Clamp, Cable, 3/8"	2			
5	P	117902	664		Terminal, End Stop	2			
6	P	117909	788	X	Terminal	3			
7	P	117909	792		Terminal, Hub Cap	3			

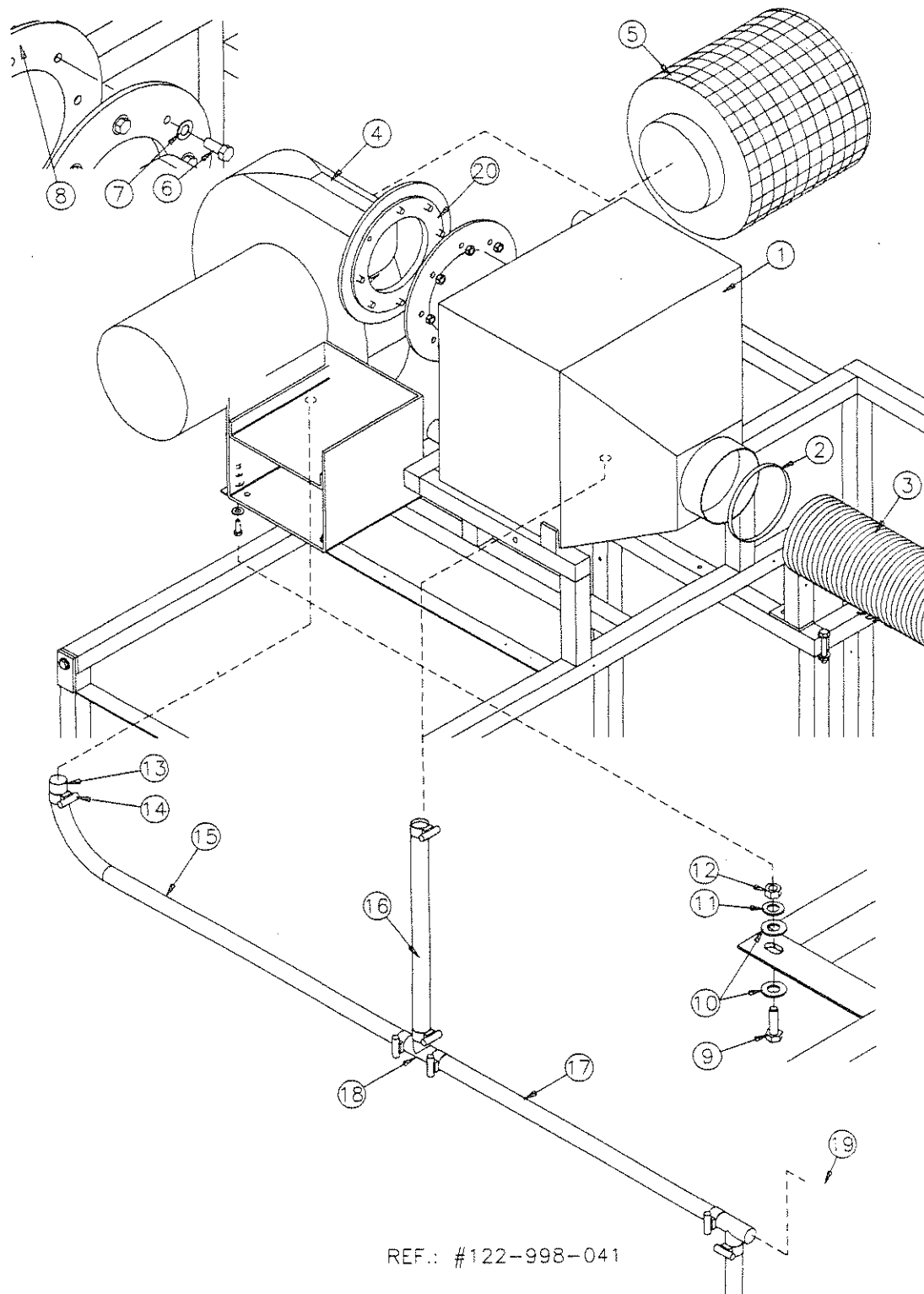


Figure 9-31. Drying Package Assembly

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY
9-31			DRYING PACKAGE ASS'Y	
1	117997	020 X	Box, Heat Exchanger, Drying	1
2	117950	793 X	Clamp, S/S, #96 4-1/2" x 6-1/2"	2
3	117005	074 X	Hose, Drying, 6"ID x 30" Lg	1
4	117909	675 X	Fan, with Flange, 50/60Hz (Modified with Drain)	1
5	117989	188 X	Inlet Filter	1
6	117957	218	Bolt, S/S, 7/16-20 x 1"	8
7	117950	989	Washer, Lock, S/S, 1/2"	8
8	117957	327	Nut, S/S, 7/16-20	8
9	117950	906	Bolt, S/S, 5/16-18 x 1"	4
10	117950	977	Washer, S/S, 5/16"	8
11	117950	987	Washer, Lock, S/S, 5/16"	4
12	117950	954	Nut, S/S, 5/16-18	4
13	117999	116 X	Half-Nipple, S/S, 1/2"NPT x 1-7/8"	1
14	117950	786 X	Clamp, S/S, #12 9/16" x 1-1/4"	A/R
15	117952	305 X	Hose, Reinforced, 3/4"	A/R
16	117952	305 X	Hose, Reinforced, 3/4"	A/R
17	117952	305 X	Hose, Reinforced, 3/4"	A/R
18	117905	956 X	Tee, Polyethylene, 3/4"H x 3/4"H x 3/4"H	2
19	117905	957	Elbow, Polyethylene, 3/4"H x 3/4"H (w/o Drying System) (Not shown)	1
20	117997	025 X	Gasket, Exhaust Duct and Drying	1

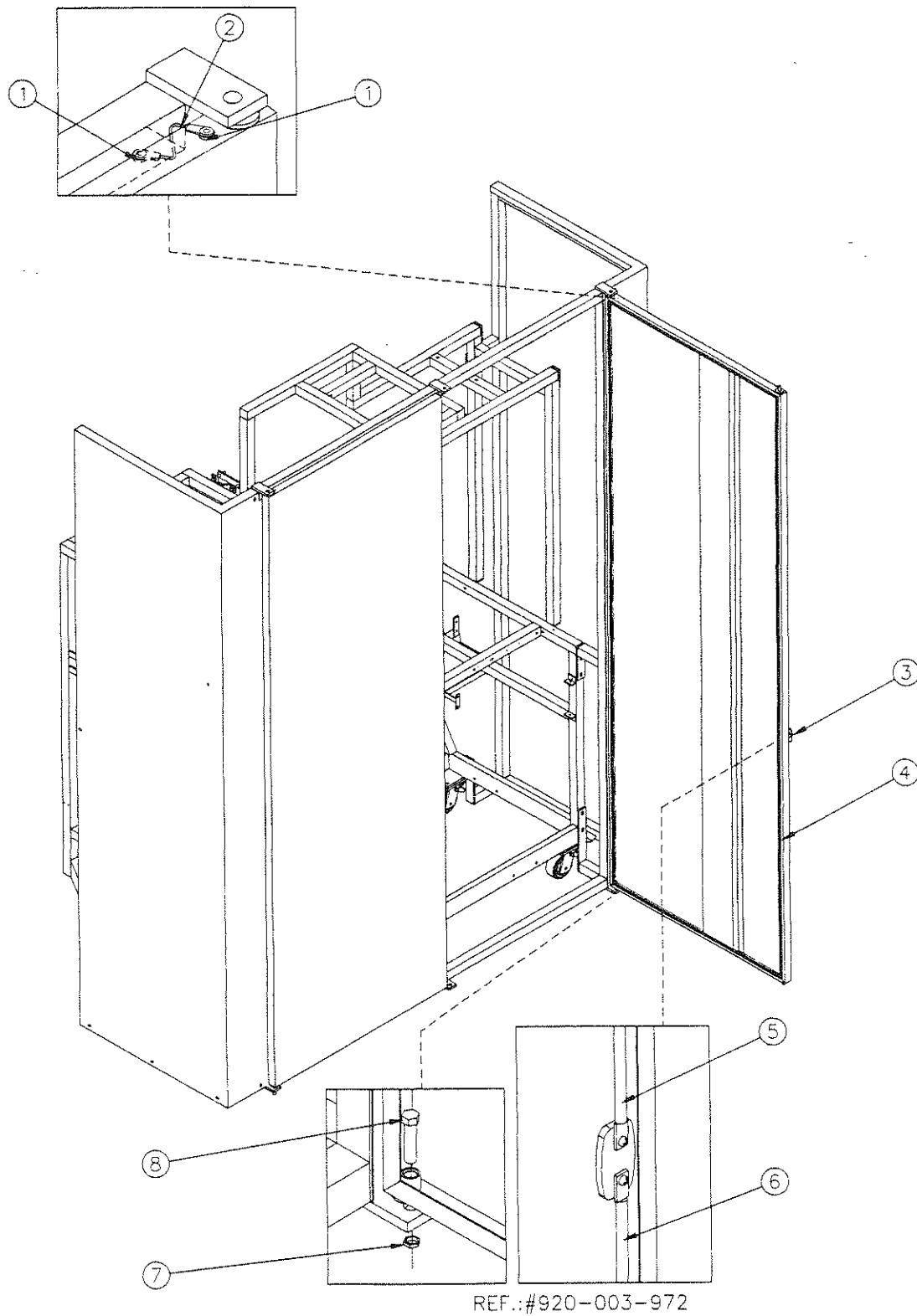


Figure 9-32. Service Access Panels

FIG. & ITEM NO.	PART NUMBER		S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-32				SERVICE ACCESS PANELS				
1	117906	017		Washer, Lock, Star Screw #10	4			
2	117997	303		Bounding, #10, 12" Ass'y	2			
3	117951	005		Handle, Spae Naur	1			
4	117905	352	X	Seal #1011-06	A/R			
5	117998	333	X	Rod, Door Lock, Top, M.Block	1			
6	117998	332	X	Rod, Door Lock, M. Block	1			
7	117942	255		Nut, Jam, S/S, 3/8-16 (Nylon inside)	2			
8	117957	208		Bolt, Hex. HD., 3/8-16 x 1-1/2"Lg	2			

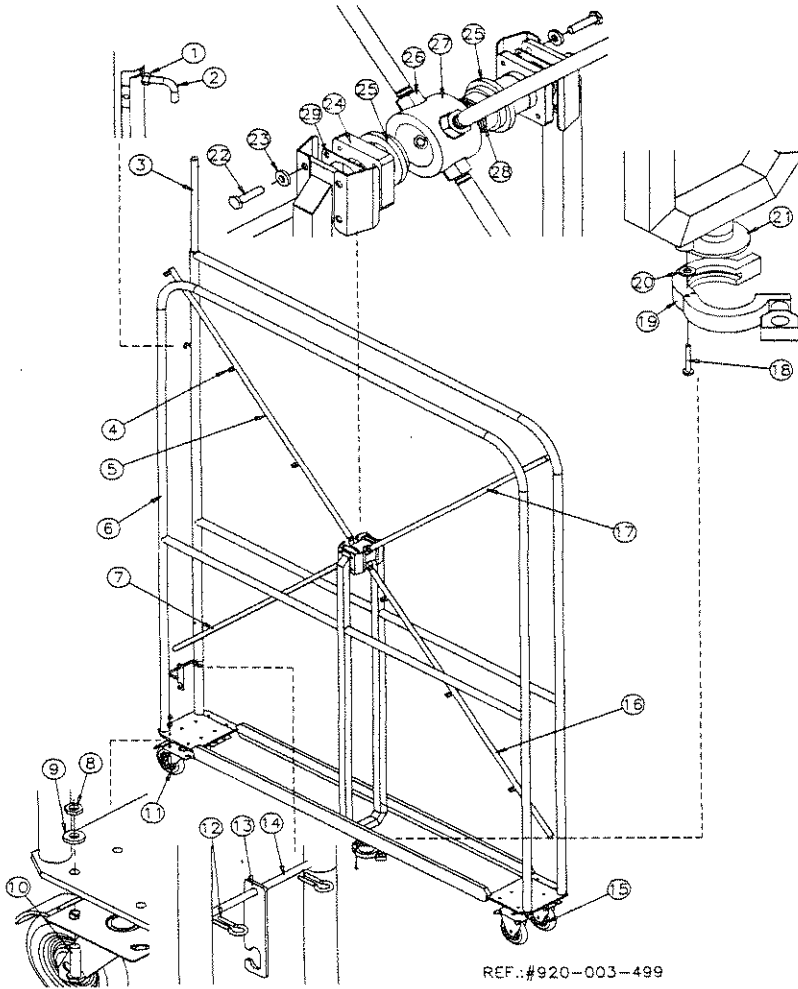


Figure 9-33. Central Header Manifold

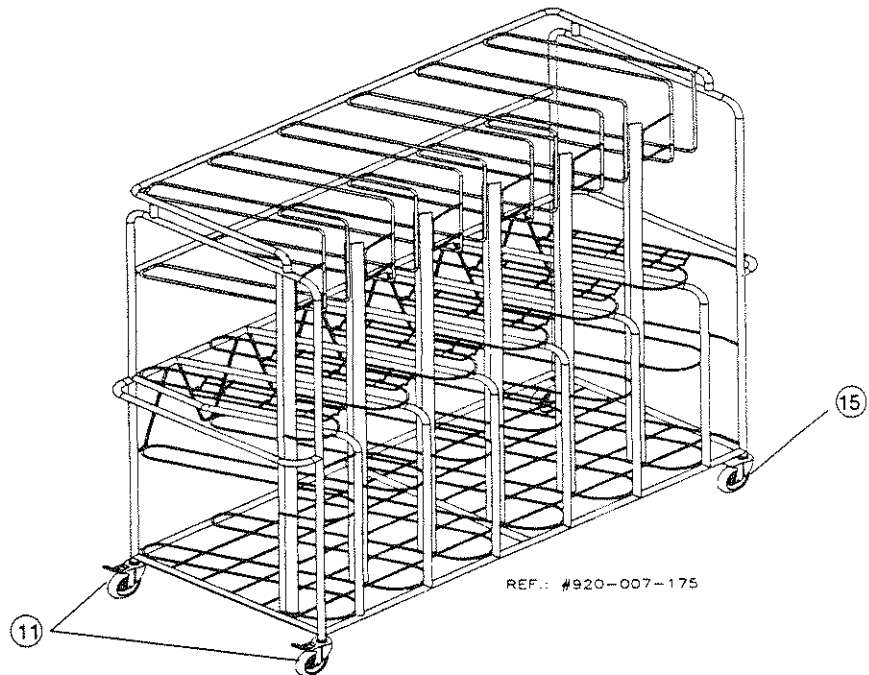
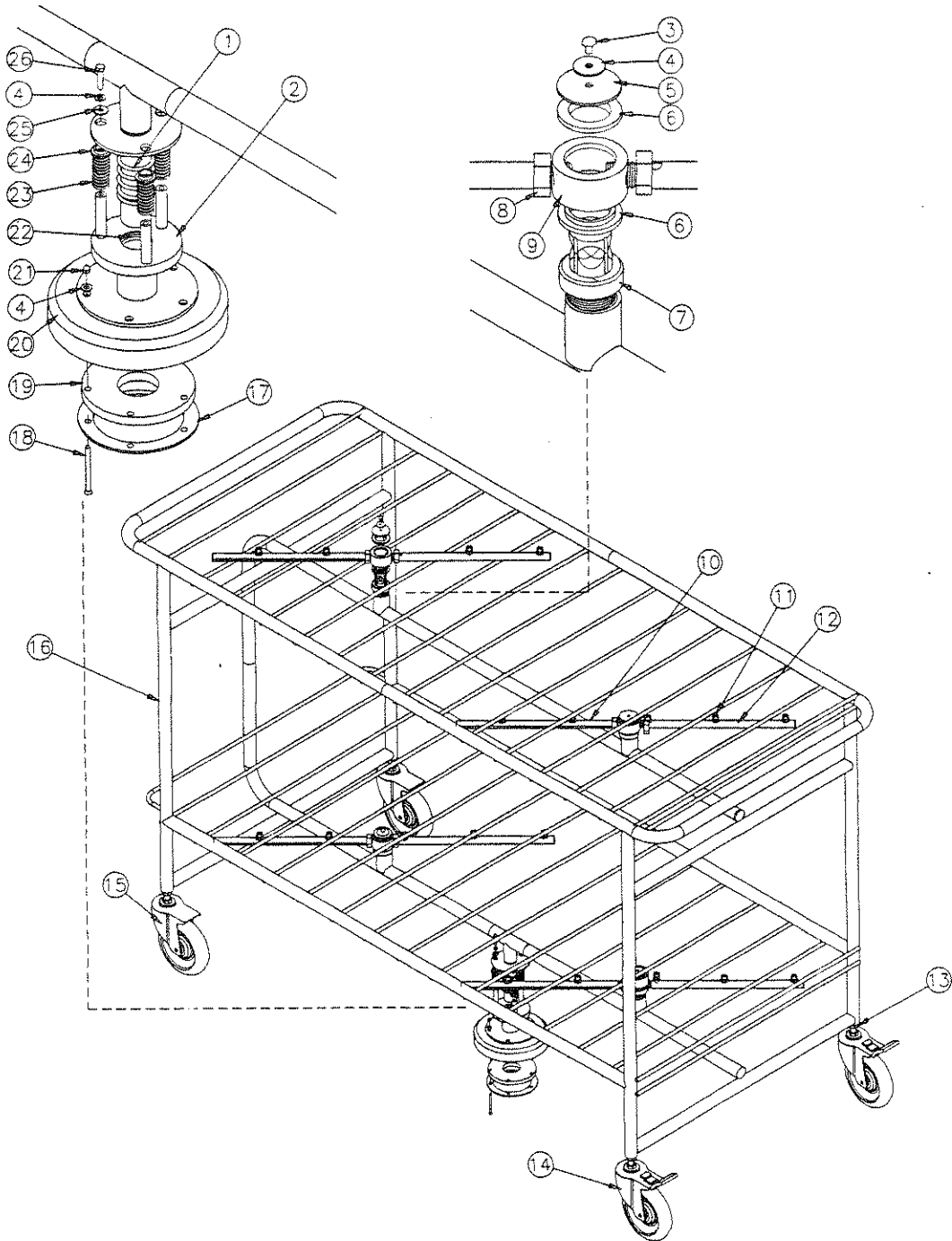


Figure 9-33a. Pan Cart

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-33			CENTRAL HEADER MANIFOLD	X			
9-33a			PAN CART		X		
1	117942	761	X Nut, Jam, S/S, 1/4"-20 (Nylon Inside)				
2	117999	149	X Handle, Rod, Stopper	1			
3	117999	152	X Rod, Stopper,	1			
4	117909	774	X Jet, Spray, S/S, 1/8", NPT, #HU9530 VEEJET	12			
5	117996	801	X Arm, Spray, #2	1			
6	117996	811	X Header, Central, EPO	1			
7	117996	820	X Arm, Spray, #4	1			
8	117957	201	X Nut, Cap, S/S, 5/16"-18	16			
9	117950	987	X Washer, Lock, S/S, 5/16"	16			
10	117957	204	X Bolt, S/S, 5/16"-18 x 1/2"	16			
11	117909	771	X Wheel, Swivel, S/S, 4" Dia., w/ brake #Y480DPSS03CS	2	2		
12	117951	016	X Pin, Cotter, S/S, 1/16" x 1/2"	2			
13	117998	375	X Lock	1			
14	117998	377	X Support, Lock	1			
15	117909	772	X Wheel, Fix, S/S, 4" Dia, w/o brake #Y482PSS03CS	2	2		
16	117996	817	X Arm, Spray, #3	1			
17	117996	800	X Arm, Spray, #1	1			
18	117950	871	X Screw, S/S, Truss Head, 10-32 x 1-1/2"	1			
19	117951	196	X Clamp, Quick-disconnect, 1-1/2"	1			
20	117950	951	X Nut, S/S, 10-32	1			
21	117951	651	X Gasket, Silicone, 1-1/2"	1			
22	117950	900	X Bolt, S/S, 1/4-20 x 3/4"	8			
23	117950	986	X Washer, Spring, S/S, 1/4"	8			
24	117996	808	X Support, Hub, Arm, Spray	1			
25	117996	805	X Bushing, Hub	2			
26	117950	959	X Nut, S/S, 5/8-18	4			
27	117996	804	X Hub, Arm, Spray	1			
28	117996	806	X Ring, Adjustment, Hub, Arm, Spray	1			
29	117005	824	X Gasket, Center Spray Header	2			



REF.:#920-003-500

Figure 9-34. Bottle Washing Cart

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY			
9-34			BOTTLE WASHING CART	X			
9-34a			RODENT CAGE RACK		X		
9-34B			UNIVERSAL CAGE AND PAN WASH CART			X	
1	117950	138 X	Spring, Seal, Pump	1			
2	117999	150 X	Water Connector Mobile Bottle Acc.	1			
3	117950	866 X	Screw, S/S, Truss head, 10-32 x 3/8	4			
4	117950	975 X	Washer, S/S, 3/16"	3			
5	117951	419 X	Washer, S/S, 1 1/2" OD x 3/16" ID	4			
6	117987	854 X	Bushing, Rotary Spray	8			
7	117988	384 X	Holder, Top Rotary Spray, 444, ND	3			
8	117953	466 X	Nut, Lock, S/S, 5/8-18	8			
9	117005	167 X	Hub, Spray Header, Bottle Cart 9500	4			
10	117909	453 X	Spray Arm, (K) Utensil Cart 9500	4			
11	117910	511 X	Spray Nozzle, S/S, 1/8" #8010, Veejet	20			
12	117909	387 X	Spray Arm, (J) Utensil Cart 9500	4			
13	117957	197 X	Nut, S/S, 1/2-13	4			
14	117909	886 X	Wheel, Swivel, S/S, 5" DIA, #Y580DHSS03CSST	2	2	2	
15	117909	887 X	Wheel, Swivel, S/S, 5" DIA, #Y581HSS03CSST	2	2	2	
16	117909	586 X	Bottle, Rack, EPO, 9500	1			
17	117003	684 X	Retaining Ring	1			
18	117950	832 X	Screw, S/S, Flat head, 8-32 x 1-3/4	5			
19	117003	361 X	Gasket, sliding Water Inlet, 9500 ND	1			
20	117999	141 X	Coupling, Bottom Connector, Plastic 9500	1			
21	117957	200 X	Nut, Cap, S/S, 8-32	5			
22	117956	047 X	O-Ring, 1-1/4", OD, 9500	1			
23	117951	274 X	Spring, Latch, Safety	3			
24	117003	673 X	Bushing, Movable Water Inlet, Bottle Washing Cart	3			
25	117950	976 X	Washer, S/S, 1/4"	3			
26	117950	896 X	Bolt, S/S, 10-32 x 3/4"	3			

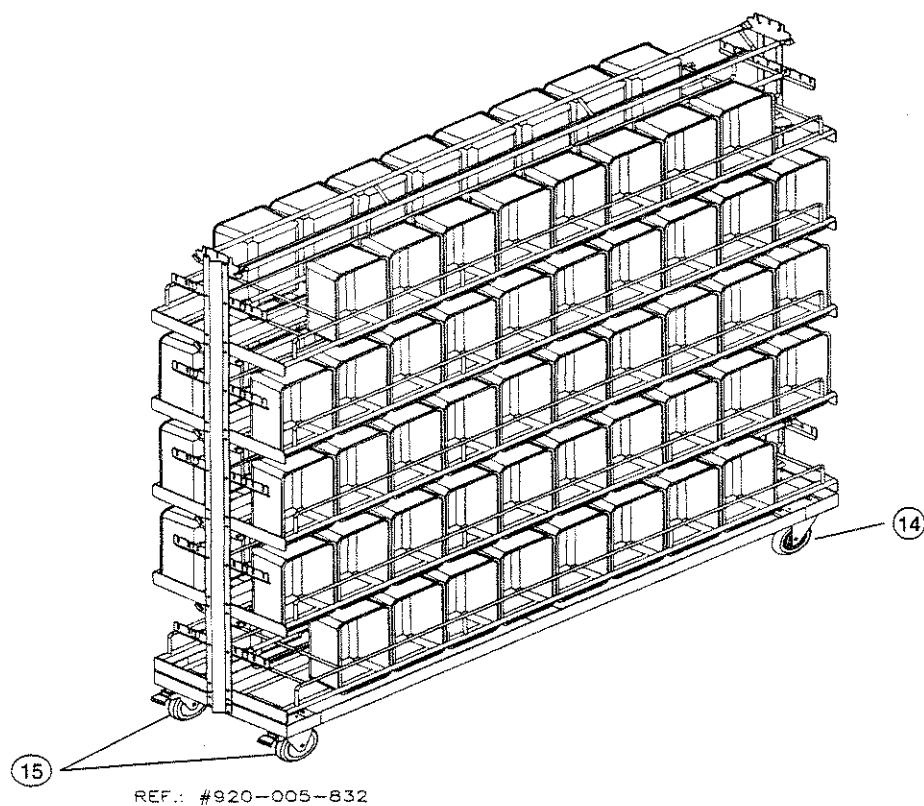


Figure 9-34a. Rodent Cage Rack

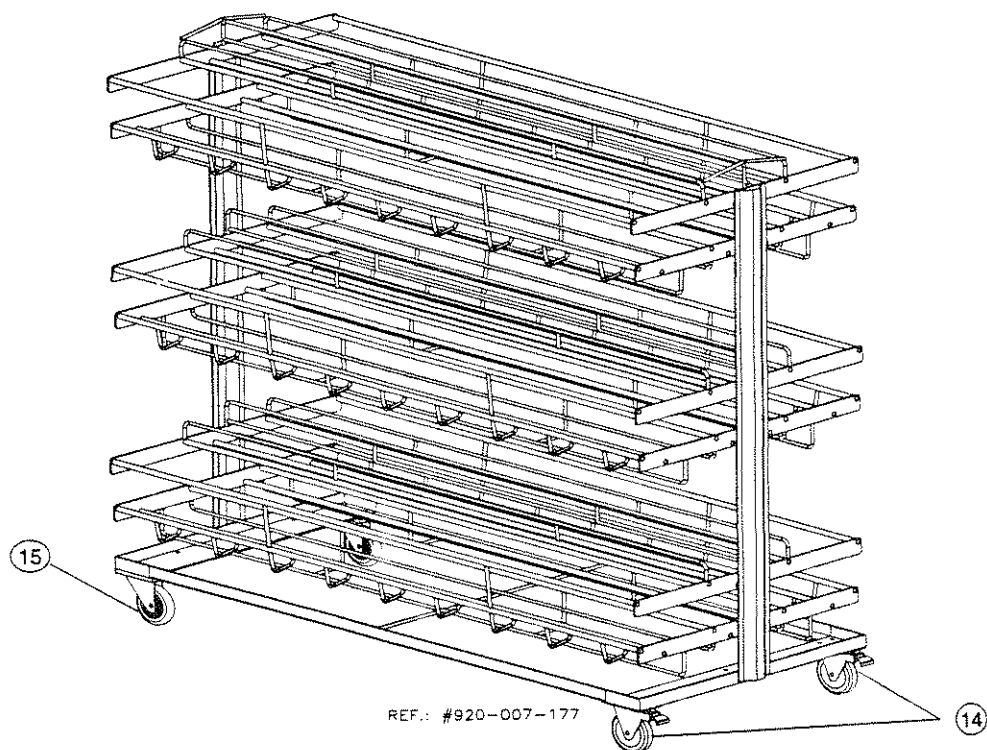


Figure 9-34b. Universal Cage and Pan Wash Cart

FIG. & ITEM NO.	PART NUMBER	S V C	DESCRIPTION	UNITS PER ASSEMBLY
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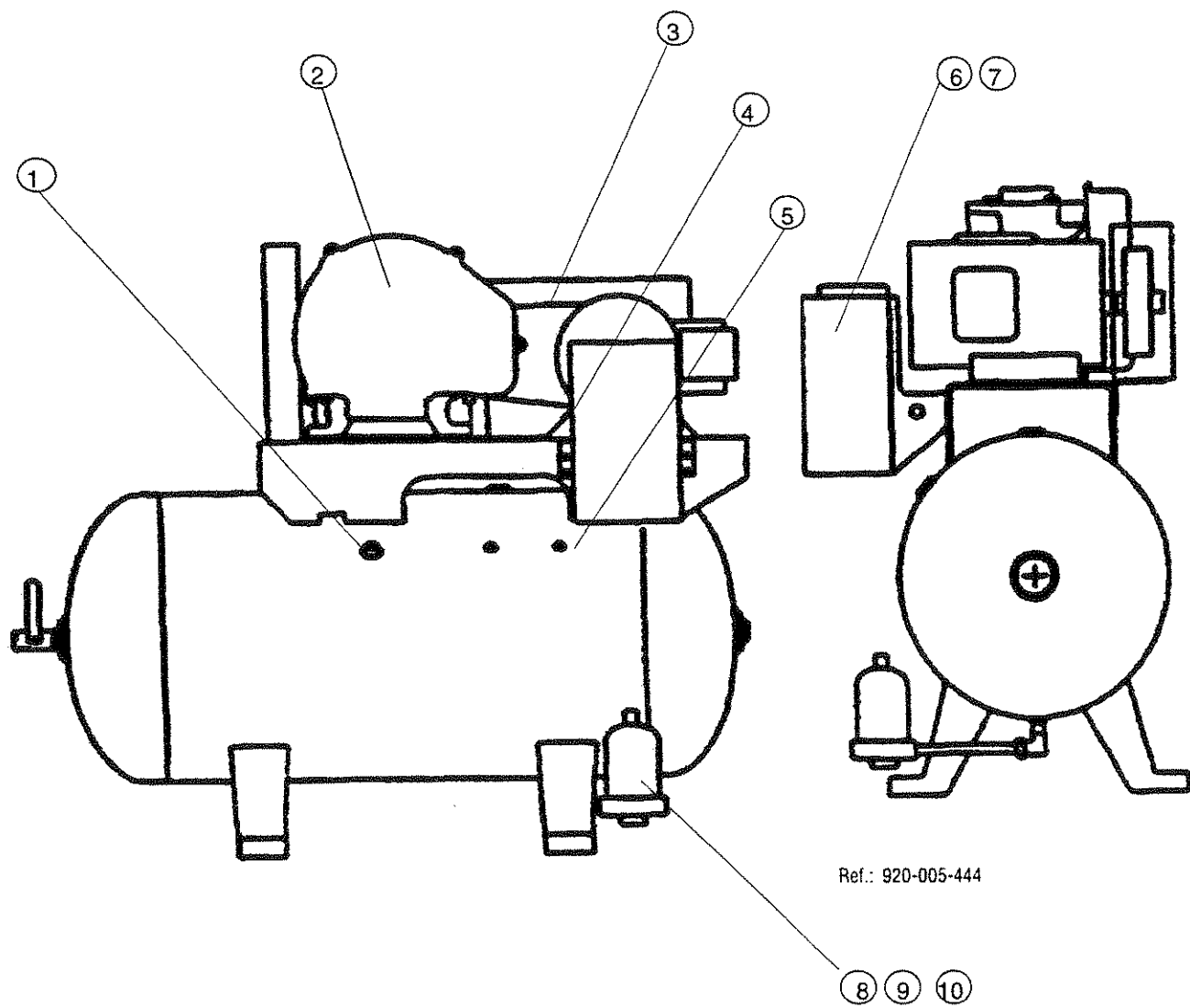


Figure 9-35. Air Compressor Assembly

FIG. & ITEM NO.	PART NUMBER		S V C	DESCRIPTION	UNITS PER ASSEMBLY		
9-35	129353	714		AIR COMPRESSOR ASSEMBLY 208 V, 3 HP, 3-Ph, 60 Hz.....	X		
	129353	715		230 V, 3 HP, 3-Ph, 60 Hz.....		X	
	129353	716		460 V, 3 HP, 3-Ph, 60 Hz.....			X
				Tankmount Service Parts:			
1	764328	602		Valve, Check	1	1	1
2	764328	601		Filter Element, Intake	1	1	1
3	764328	604		V-Belt	1	1	1
4	764328	606		Pressure, Switch	1	1	1
5	764328	603		Valve, Safety	1	1	1
	764328	607		Kit, Tip Seal (Not shown)	1	1	1
	764328	605		Kit, Grease Gun (Not shown)	1	1	1
				Starter Contactor Parts:			
6	764328	663		Contactor	1	1	1
7	764328	667		Overload	1	1	
	764328	668		Overload			1
				Automatic Condensate Drain:			
8	764328	684		Trap, Snap, M/N 508	1	1	1
9	764328	600		O-Ring, Head-Bowl	1	1	1
10	764328	599		Trap, Internal, Assembly	1	1	1

